THE IRON AGE

THURSDAY, JULY 2, 1891.

Connecticut Manufactures.

The Connecticut Bureau of Labor Statistics, under the guidance of Samuel M. Hotchkiss, the Commissioner, is producing a mass of statistics bearing on the State's manufactures, which possesses not only much immediate value, but which will have added value in the future for purposes of comparison. The 636 establishments from which the bureau has returns gave employment to 75,191 persons during 1889, and this is independent of the persons classified under the head of superintendence, numbering 3933 more. The amount of the capital invested in these 636 establishments, representing 40 different lines of trade, was $117,361,435. The value of goods manufactured during the year was even larger, reaching $125,723,066. The materials used in manufacture constitute the largest item, this being given at $67,228,874. Cost of manufacture was $45,541,070, of which no less than $32,720,018 was paid out in wages, the amount paid for superintendence, &c., being $4,904,062. The charge for interest, rents and taxes was only $2,392,009; it is, of course, understood that the interest here included does not mean interest on capital, but simply interest on borrowed money. To get at what was left for capital we must deduct the various items of cost as already enumerated from the total value of the goods, and this leaves a balance of $10,561,114. Nothing is said as to deterioration of plant and machinery, and we suppose no allowance for this has been made. But even as they stand the net profits must be considered quite small, as they are equal to only 8.99 per cent. on the $117,361,435 of capital, and to only 8.4 per cent. of the $125,723,066 of goods manufactured.

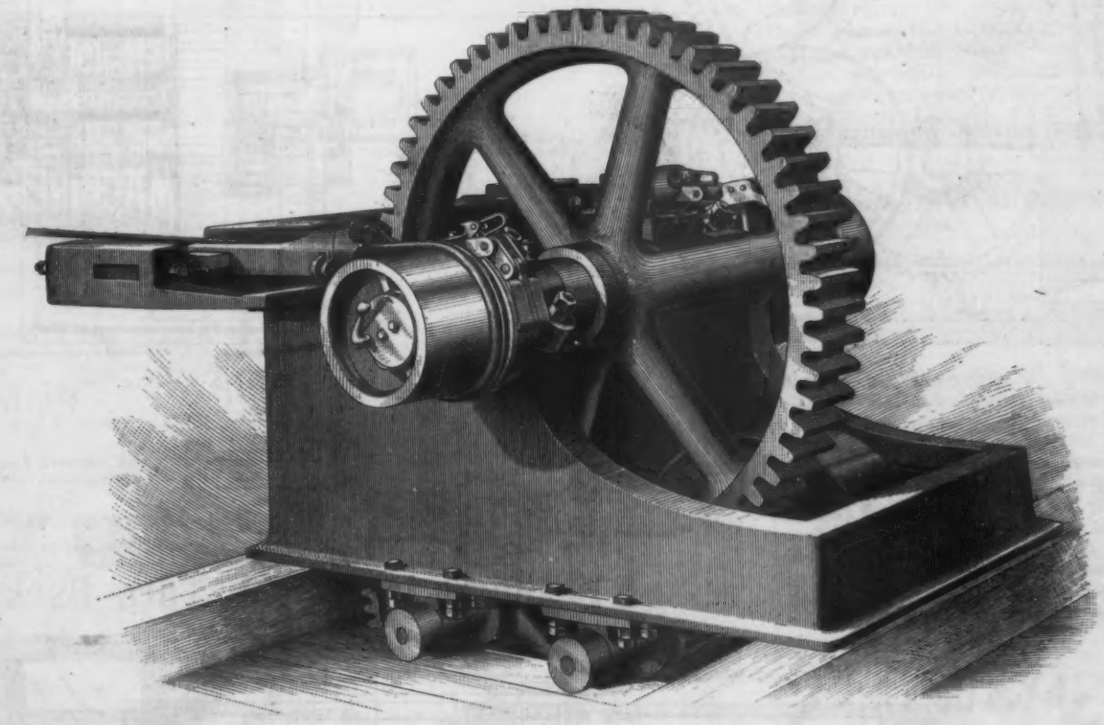
The machine shops, with 4489 hands and $8,428,884 capital, netted 12 per cent. The brass industry, where 48 establishments give employment to no less than 11,323 men, and where the amount of capital reaches $18,800,744, shows only 9.19 per cent. profit; general hardware, with 6333 hands and $7,631,941 capital, shows 8.10 per cent. profit. In silver plating, with 4286 employees and $9,929,084 capital, the return was 7.66 per cent.

The fourteenth annual convention of the Amalgamated Association of Iron and Steel Workers, which has been in session in Pittsburgh continuously since Tuesday, the 2nd ult., adjourned on the evening of the 26th ult., closing the longest session ever held since the association was organized. The convention decided to hold the next meeting in Pittsburgh, and will meet in that city on the first Tuesday in June, 1892. About the last action taken by the association was the election of officers, which resulted as follows: Wm. Weihe, president; Stephen Madden, secretary; J. C. Kilgallon, assistant secretary; Jas. Perry, treasurer. John Pierce of Pittsburgh and Thomas Mansell of Hazelton, Ohio, were elected trustees. John Martin of Indiana was elected vice president of the fifth district in place of Wm. Wightman, whose term expired. Jeremiah Gougherty and William A. Carney of Pittsburgh, and Reese W. Prosser of New Albany, Ind., were elected delegates to the convention of the Federation of Labor. In the report of President Weihe, the recommendation to reduce the length of the sessions in the future conventions by increasing the number of the Wage Committee was approved. The object is to have a representative from other lines of work than the iron and steel workers on the Wage Committee, so that the time consumed by the extra wage committees may be saved. The membership of the Wage Committee was increased one-third, and it is expected that considerable time and much work will be saved by this new arrangement.

The Morgan-Ellis Wire-Drawing Machine.

A powerful wire-drawing machine, embodying a number of novel features, has been recently built by the Morgan Construction Company of Worcester, Mass., for the Benedict & Burnham Mfg. Company of Waterbury, Conn., for drawing brass wire up to 1 inch in diameter. The first or experimental machine has been well tested at the works of Coe Brass Company of Torrington, Conn., having been built by John F. Ellis of that company, to whom a patent has been granted for it. The machine which we illustrate was built from the designs of Charles H. Morgan, whose achievements in wire mill work are widely known. It will be observed that the machine differs from those of the ordinary type in having horizontal axes for the draw blocks or drums, an arrangement which lessens labor and makes the machine more efficient. A grip vise, shown in the drawings, is attached by means of links to the block or drum on which the wire is wound. It grips the wire as it emerges through the die, and holds it to the end of the draft. The usual preliminary operation of starting by means of a draw out is dispensed with, and a material saving of time is effected. The block itself is provided with a spiral flange, which guides the wire in making the first coil around the block. The die plate holder is provided with wheels immediately below the die plate and at its back end as shown in Figs 1 and 3. On the track on which they rest the die plate holder may move freely so as to lay the coils closely without overriding, an important matter in drawing wire accurately to size and with good finish.

Figs. 5, 6, 7 and 8 show the arrangement of the clutch. The latch, which is held open by the spring when not in use,



THE MORGAN-ELLIS WIRE-DRAWING MACHINE.

operates in the manner indicated by the drawings. It will be observed that the construction of the machine is massive and is well adapted for drawing wire 1 inch in diameter of iron, steel, brass or copper.

The Springfield Iron Company.

Among the most enterprising iron manufacturers in the West are the Springfield Iron Company of Springfield, Ill. They were first in America to successfully introduce the use of gas for heating and puddling. Built originally for the manufacture of iron rails, the works were gradually adapted for the production of other forms of iron and steel as the iron rail passed out of use. An open-hearth steel plant was erected at an early day in the development of that branch of trade, and a Bessemer steel plant was afterward added, so that the company are prepared to meet any phases of the iron or steel trade which time may bring forth. They have recently entered with characteristic energy into the manufacture of fuel gas by a new system, and have thus greatly added to the efficiency of their works and increased their advantages over less enterprising competitors.

LOCATION OF THE WORKS.

The works of the Springfield Iron Company are situated about three-quarters of a mile north of the city limits of Springfield, Ill., in an angle formed by the junction of the Chicago and Alton and Jacksonville Southeastern railways, which have tracks connecting with those of the company. The main line of the Wabash railway is also not more than a quarter of a mile distant, and is connected with the works by a special switch. The land owned by the company comprises about 50 acres, and is supplied with between 2½ and 3 miles of standard-gauge track, besides an elevated railway for the distribution of coal. The coal used by the company is mined on the premises from the very ground on which the works are located, and the cars loaded by the miners in the pit dump the coal without further handling at the furnaces ready for use.

MILL EQUIPMENT.

The works were originally built in 1871 for the manufacture of iron rails, and then represented the best practice of that day both in construction and operation. The rail mill was equipped with Siemens heating furnaces, which were the first gas furnaces built in America for heating iron. Their original equipment also included two gas puddling furnaces, the first furnaces of the kind built in this country. These furnaces are still in operation, with very few modifications; and it is a great tribute to the genius of Siemens, who designed them, to say that one of the best known metallurgical engineers and furnace builders of Pittsburgh recently told the company, after comparing the drawings of his modern furnaces with the old ones, that the latter were fully as efficient and economical as any that could be built to-day. The iron-rail mill was also equipped with mechanical charging and drawing appliances and the Gustin rail cambering and straightening apparatus at a time when these were great innovations and in advance of almost all other works of this description. The method of making iron rails was to make a very large pile, about 15 inches square, bloom this down to about 7 inches square, reheat it and then finish it into the rail. The ability of this company by this method to make rails of the best quality and with the mechanical appliances at minimum cost was what enabled them to stay in the rail market until 1882, when all of the other iron-rail mills had ceased to work.

PRESENT CONDITIONS.

The rail mill is now used as a heavy bar-iron mill, making heavy bar iron and splice bars in the same way. Very heavy piles of large section, weighing from 500 to 750 pounds, are first bloomed, then reheated and rolled off. In this way heavy sizes of car iron for such purposes as arch bars, transoms, &c., which are constantly increasing with the increasing capacity of the cars, can be made of the best quality, and with great facility and economy. In addition to this bar mill, which is a 22-inch train, the company have in operation one 18-inch bar mill, one 16-inch bar mill and two 12-inch guide mills.

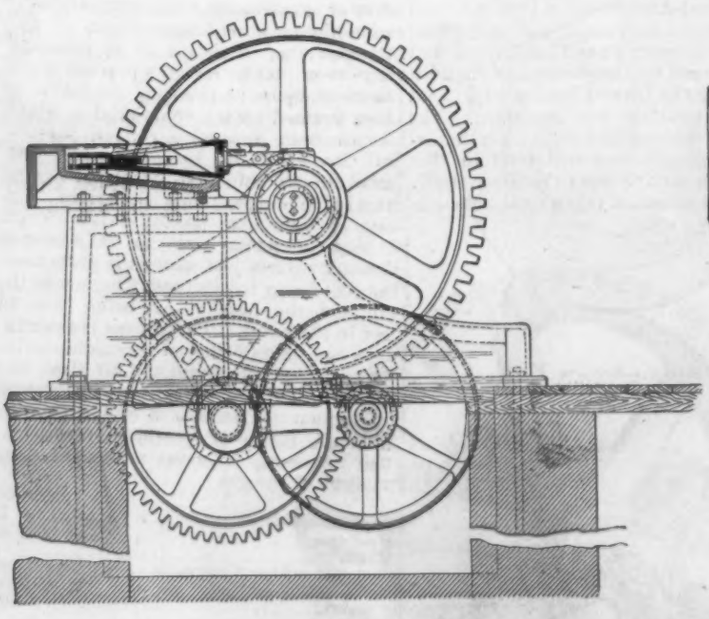


Fig. 2.—Side Elevation

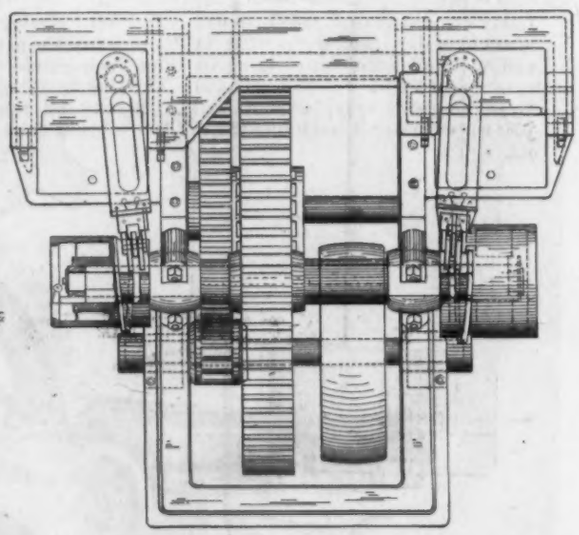


Fig. 3.—Plan.

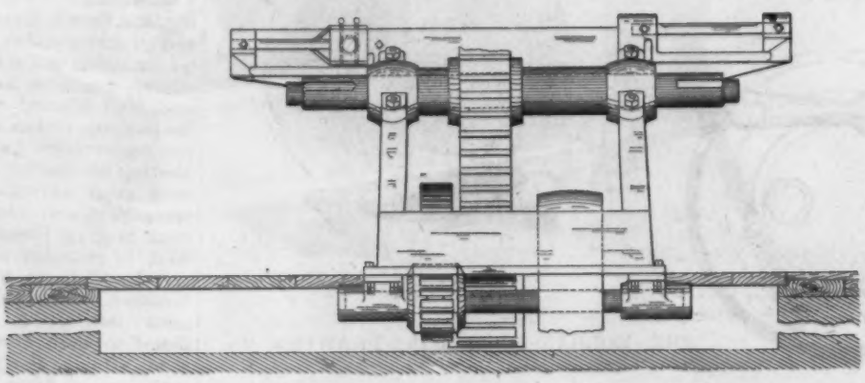


Fig. 4.—End Elevation.

THE MORGAN-ELLIS WIRE-DRAWING MACHINE.

These are all equipped with Siemens gas furnaces for heating and with all of the most modern and efficient appliances and tools for preparing the stock, shearing and finishing the product. These mills are all equipped to roll both iron and steel bars, and as an indication of their efficiency we give below a table showing the number of net tons of finished product which have actually been made and shipped in one month from each mill :

Table of Monthly Product.

	Net tons.
12-inch mill (No. 1)	1,127
12-inch mill (No. 4)	927
16-inch mill (No. 1)	1,771
18-inch mill (No. 2)	1,760
22-inch mill (No. 3)	2,629
Total	8,214

The company have also special facilities for making and punching angle splice bars, which form a very important part of their product. They have four large punches for this purpose, and have made and shipped in one month 4500 net tons of splice bars, which it is believed has never been equaled by any other works.

The company have also an 18-inch puddle mill, and have, in addition to the puddling furnaces, two gas busheling furnaces of very large capacity. The capacity of the finishing mills, however, has increased so much faster than the puddling capacity that the company have been for some time past large purchasers of muck bar, and have within the past year added largely to their plant for cutting and preparing scrap iron. For this purpose alone nine large shears are used, which have repeatedly cut over 300 tons of scrap in one day. Among others they have one shear with 36-inch blades, capable of cutting 5-inch round iron cold.

An important department of the works is the nut and bolt shop, devoted exclusively to the manufacture of track bolts. This department had been in operation for many years, but in the summer of 1890 it was entirely burned to the ground, and in rebuilding it was remodeled and modernized in every possible way, so that their equipment to-day is first-class for turning out the best bolts with a minimum of labor and handling. This department has a capacity of about 1500 kegs per month

In addition to the iron departments, there are at these works two 15-ton Pernot open-hearth furnaces, built in 1879, and two 5-ton Bessemer vessels, built in 1887. Both steel departments are at present idle, the company finding it more to their interest to employ their finishing mills on iron and on purchased steel billets. The 31 x 112-inch steel plate mill, built in 1885, is now leased to the Carbon Iron Company, who are finishing into plates for Government cruisers and general boiler work ingots made in their own open-hearth furnaces at Pittsburgh.

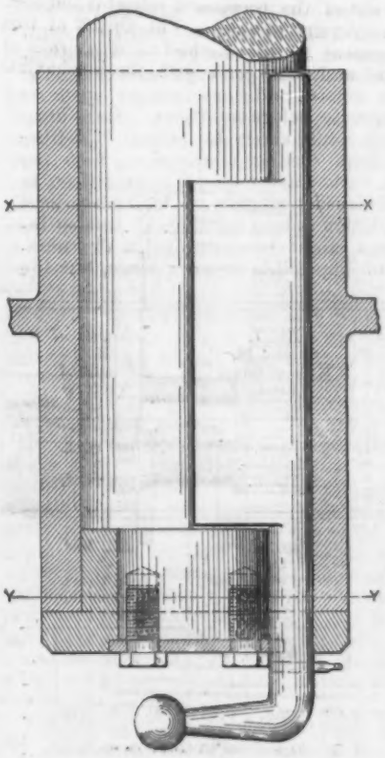


Fig. 5.—Section of Clutch.

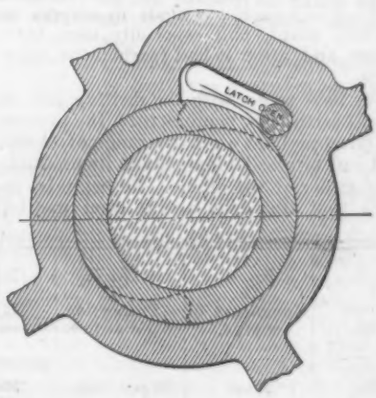


Fig. 7.—Section Y Y.

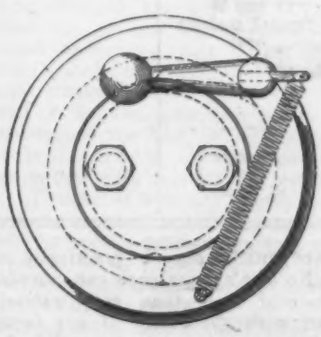


Fig. 6.—End View of Clutch.

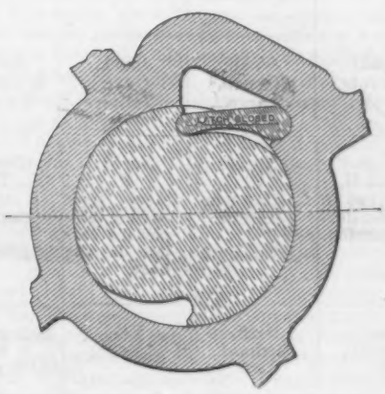


Fig. 8.—Section X X.

THE MORGAN-ELLIS WIRE-DRAWING MACHINE.

THE NEW FUEL GAS PLANT.

For the past two years the company have been conducting, under the direction of Dr. Alphonse Hennin, their chemist, a series of experiments and investigations on the subject of the improvement of fuel gas and the extraction of by-products. Dr. Hennin has perfected a process which has now been in practical operation at these works for about a year, and on which he has been allowed American patents, and for which he has applied for patents in all of the principal countries of Europe. The apparatus consists of a circular producer into which a blast of steam and air is admitted through tuyeres just above the grate bars, the coal being fed through a hopper at the top, and the bed of coal being 10 or 12 feet in thickness. The process is a continuous one, there being no alternation or intermission of the steam and air blast, and the peculiarity of it is its simultaneous production of ammonia as well as gas, the ammonia being of synthetic formation. The following is about a characteristic analysis of the gas :

	Per cent.
Carbonic oxide	18
Hydrogen	37
Marsh gas	5
Carbonic acid and nitrogen	40
Total	100

The gas is drawn from the producer by means of a Root exhauster, passed through a tar washer and water condensers for cooling, and thence through a water scrubber and an acid scrubber, which remove all the tar, ammonia and sulphur. The gas being entirely free from sulphur, and possessing such high calorific value as is shown by the analysis, makes an almost ideal fuel for regenerative gas furnaces, either for heating or melting, and can be applied with great advantage to a great many other purposes, such as glass furnaces, brick making, steam raising, &c. It has been in constant use for six or eight months at these works in two Siemens furnaces, where it has given the utmost satisfaction. The furnaces are found to work much quicker and hotter than with ordinary Siemens gas, and with no apparent drawbacks in the way of increased furnace waste or wear and tear of the furnaces. This gas will be especially applicable to the manufacture of open-hearth steel on account of its very high heating qualities, the regularity of its composition and the absence of sulphur.

It has been found that enough tar and ammonia can be produced by this process to pay very handsomely, while the gas generator is much superior as a metallurgical fuel to the ordinary Siemens gas, even when coal can be had, as at these works, at less than $1 per ton, and it is far cheaper than any oil vapor gas or water gas made by any intermittent process.

ADVANTAGES OF LOCATION.

The special advantages enjoyed by this company are the very low price at which their fuel can be obtained and the convenience of Springfield as a distributing point. As stated before, the coal is mined on the spot, and dumped from the pit cars at the furnaces and boilers ready for use. In this way mine-run coal is had at a very small cost above the wages of the

miner. A large part of the coal used at the works, however, is slack coal, obtained from the adjacent mines, which can be had for the mere cost of transportation, and is delivered at the works for not over 10 cents per ton. Many of the boilers have been run for years with no other coal than this. Springfield is situated in the center of a great car building, railway and general manufacturing district, and through its excellent railway connections the Springfield Iron Company are able to reach with special facility all of the large consumers of iron and steel in the West.

Variations of the Open-Hearth Steel Process.

BY HENRY D. HIBBARD, PITTSBURGH, PA.

In studying the problems arising in steel manufacture and proposing means for its improvement, each investigator naturally turns to his own field or specialty. The mechanical engineer advocates mechanical means, the chemist looks to the composition, the physicist to the molecular constitution and the steel melter to treatment in the furnace. As a matter of fact, neither one has the more important part; all must work together to reach the highest results.

The common way of speaking of steel and its properties seems to be based on the idea that steel is steel. A more correct, or rather less misleading way, would prevail if it were understood that steel may or may not be steel, or, to put the matter more directly, steel may be lacking properties it should have and have some it should not possess. Much that is written by lay writers on steel is absolutely valueless or worse, because misleading. They lack data needed to make their writings clear.

In the good times to come, when we will be able to determine in a piece of steel, in addition to those elements usually sought for, its content of oxygen, nitrogen, hydrogen, carbonic oxide, silica and perhaps other constituents, or such of them as have been found to have effect, and also know something of the molecular constitution of steel, we may be able to know it for what it is and tell what it is good for, but now we must have instead of this its history.

Good steel can only be made from good—*i.e.*, suitable—materials, but from the same materials bad steel may be made as well as from unsuitable materials. It is generally understood that it is not proper to compare unreservedly with each other steels made by the three great processes known as the crucible, Bessemer and open hearth, but that is not enough. In our present state of ignorance we must not compare steels outwardly made alike by the same process unless we know something of the conditions of manufacture under which each was made in respect to process, plant, and especially men, both before and after it had reached the ingot stage.

We have to do with the melting part of open hearth steel manufacture, the process covering perhaps a greater range of chemical and physical properties in its products than either of the others. To begin let us state that the open-hearth steel melter, given his plant and materials, has two agents with which he accomplishes all his results and the quality of his product will be governed by his use of them. These are: 1, heat, and 2, oxygen. Differences in their use and control give all the variations of which the process is capable under a given set of conditions, as to plant and other unchangeable factors. As heat is derived from the oxidation of the fuel, the number might be narrowed down to one. Yet many melters who can make merchantable steel of qualities familiar to them have never heard of this useful element. They are familiar with the phenomena it causes and these guide them in their work

The writer in his notes has for some years used the following rough subdivisions of the subject, which cuts it into six parts, and for many purposes this is enough:

1. Acid. Pig and scrap.
2. Acid. Excess of pig.
3. Acid. Pig and ore.
4. Basic. Pig and scrap.
5. Basic. Excess of pig.
6. Basic. Pig and ore.

The names indicate the characteristics of each division.

The above table gives the principal observable variables which affect the results which have come under the notice of the writer. The list could be largely extended by adding less important ones.

In the table is placed over each column the agent or agents chiefly concerned in its variations, either actively or passively, O for oxygen and H for heat.

Certain extremes in the table cannot be met in the same charge; for example, 90 per cent. pig with no ore and fair melting. Slow melting might result in burning out the large amount of carbon if, in the meantime, the basic irony slag had not cut its way out of the furnace through the bottom. Again, 10 per cent. pig, 1 per cent. manganese in the charge, quick melting, no ore and 0.25 per cent. carbon in the bath before additions, cannot give no manganese before additions. Some manganese would surely be present. Neither can high casting temperature, 0.40 per cent. carbon and 0.30 per cent. silicon in the finished steel give no to "gases kept in solution during teeming." And so instances might be multiplied. The number of impossible cases is large, but the number of possible ones is practically infinite. No man's experience can possibly have covered more than comparatively few, but with the effect of any factor known in a general way it is possible for an intelligent melter to work out by a series of approximations the manufacture of any particular grade or quality. The vast number of variations makes it impossible that he should reach the highest possible perfection in a lifetime. He may be near enough to it to produce merchantable steel in a short time, but the various methods and formulas used in different works in trying to produce the same result, and the variable results reached by any one maker in trying to fill or surpass given specifications, testify to the fact stated above that perfection is not attained.

A melter in working out a problem of manufacturing steel may divide his variations into four grand divisions, and subject his metal to treatment under them, viz.:

1. Low temperature and low oxidation.
2. Low temperature and high oxidation.
3. High temperature and low oxidation.
4. High temperature and high oxidation.

The varying results obtained will indicate to him the direction in which to look for success, and he may pursue the refinements of manufacture to his satiety.

Variable..	No. 1. Furnace hearth.	No. 2. O. Per cent pig.	No. 3. O. Per cent scrap.	No. 4. O. Manganese in charge.	No. 5. O. Proportion ch'g'd at first.	No. 6. H. Rate of melting.	No. 7. O. and H. Kind of flame used.	No. 8. O. Amount of waste.
Limits....	Acid. Neutral. Basic.	10 to 90	90 to 10	None to 2 per cent.	50 per cent. to all.	Slow. Fair. Quick.	Thin. Medium. Thick.	5 per cent. to 10 per cent.

O = Oxygen.
H = Heat.

No. 9. O. Ore used.	No. 10. O. and H. Action at end before additions.	No. 11. O. and H. Action after additions before tapping.	No. 12. O. and H. Amount of slag.	No. 13. O. and H. Color of slag before additions.	No. 14 O. and H. Texture of slag before additions.	No. 15. O. Before additions. Per cent.			No. 16. O. Additions. Per cent.			
						C.	Mn.	Si.	C.	Mn.	Si.	æ.
None to 20 per cent.	Dead. Moderate. Lively. Wild.	Dead. Moderate. Lively.	Small. Normal. Large.	Black. Olive. Yellow.	Earthy. Crystalline. Vitreous.	0.05 to 1.30	None. to 0.20	0.01 to 0.30	0.04 to 1.00	0.20 to 1.50	0.01 to 0.30	....

No. 17. O. Finished steel.				No. 18. O. and H. Time after additions.	No. 19. O. and H. Gases kept in solution during teeming.	No. 20. H. Casting temperature.	No. 21. H. Hotter than casting temper'ure earlier in the heat.	No. 22. H. Weight of charge.	No. 23. O. and H. Time of making heat.
C.	Mn.	Si.	æ.						
0.08 to 1.40	0.10 to 1.00	0.01 to 0.30	... ...	5 minutes to 30 minutes.	Yes. Partially. No.	High. Medium. Low.	Yes. No.	3000 pounds to 80,000 pounds.	3 hours to 15 hours.

Melters sometimes lay particular stress on some one factor, or method of using it, as being the most important one. It will usually be found to be the one which, in connection with their other established methods, enabled them to produce commercial results or made a marked improvement in their work. Stress has been laid on character of flame, manganese in the charge, additions of ore, additions of pig, casting temperature, amount and nature of additions and time after additions as being the most important points to be watched, whereas all are mutually interdependent.

A skilled melter working regularly, who follows up the testing machine, will become very expert in foretelling the physical characteristics of his different heats. But let his practice be changed in some way—for instance, give him a larger proportion of pig for his charge, forced, it may be, by commercial reasons—and he will lose his *finesse* for a time, though he will be able very soon, if not at once, to keep inside the limit of merchantable product. In this particular case he will have to use more ore, causing more slag, different degree of boil, more waste of bottom, and the heavier slag will demand a hotter furnace to give the metal the proper degree of heat.

To fully discuss the meaning and effect of the different variables, were one competent to do so, would be virtually to give a treatise on the metallurgical side of the process and would be beyond the scope of this paper, but we will venture some remarks on them. Many of these statements apply only or more forcibly to the acid processes, with which the writer has had more experience. The first heat or two on a new bottom present abnormal conditions, which are not considered here, as they cannot be maintained.

The differences between steels made by the basic and acid processes, No. 1, are often recognized by statements of the kind under consideration, and, as usually made, these differences are important. Their full signification has been by no means worked out yet and a comparison of the different linings in their effects on the product must be now somewhat premature. But the writer thinks that after the possibilities of the two processes become well demonstrated the basic will be generally used for soft and the acid for hard steel, meaning that with over 0.6 per cent. carbon. This belief is based largely on the fact that manganese is being taken up constantly by basic metal from the slag, which manganese is at work removing oxygen and silica from the metal, a most desirable state of affairs, having a direct bearing in improving the quality of soft steel. Ore can be used freely enough to induce the degree of "boil" desired without oxidizing the metal. Carbon and manganese in the original charge protect hard steel from oxidation.

With the basic process fully developed the slackened demand for Bessemer pig will reduce its premium over basic pig, so that with that and the cheaper conversion into ingot the cost of acid steel will be no more than that of basic. Then each will find its proper field of work. The proportions of pig and scrap, Nos. 2 and 3, are usually governed by commercial reasons, but the properties of the product depend to some degree on them. With only enough pig to give the desired carbon with fair melting some manganese is found at the end when the charge is ready to cast before the final additions. This manganese is a proof that the metal is not oxidized and consequently is not red short. If much manganese—say 2 per cent.—were in the bath, No. 4, at the beginning, but very little, if any, is needed in additions at the end. However, the proper degree of boil cannot be maintained with this charge. If an excess of pig is used, calling for ore to oxidize and remove the excess of carbon, this ore will, in the acid process, remove the last traces of manganese from the metal and charge it with oxygen if the carbon is low. More manganese is then needed at the end to remove the oxygen and correct tendency to red shortness.

The proportion of the charge put in at first, No. 5, has its influence, especially with sulphurous fuel. If all is charged at first the hot melting stock is exposed until covered with slag to the direct action of the flame, and absorption of sulphur and oxygen goes on. The oxygen may be corrected or removed by carbon, manganese or silicon, but the sulphur remains to lower the quality of the product.

In the items Nos. 6, 7 and 8 slow melting, thin flame and large waste are equivalent to more ore added, No. 9, and the other extremes to less ore added.

This brings us to No. 10, the boiling action of the bath, near the end of the heat before the final additions, which gives the most information, together with the temperature and the carbon in the metal, of any of the factors concerning the state of the charge. Boiling is the evolution of gases from the bath, and these gases the writer thinks are chiefly CO and CO_2, because when C is absent the bath is as placid as a pool in a calm. In this case, however, the steel is still abundantly charged with gas, which is liberated if the metal be stirred or cooled in the air, as in a test cup.

Given carbon in the bath, and with silicon and manganese largely removed, the rate of boiling depends on the proportion of oxide of iron in the slag uncombined with silica, together with the degree of heat on the metal. High temperature retards boiling while low favors it.

The melter tries to get the degree of boil before tapping which experience has taught him to be the best for the grade he is making, and herein lies the control of oxygen and to some degree of temperature by the average workman. For soft steel dead action is bad, providing C is present, while for steel castings or hard steel lively or wild action is injurious.

In the manufacture of soft steel, notably boiler or ship plate to be rolled to plate from the ingot at one operation, the writer, in common with most melters, considers a fairly lively boil beneficial to the quality. What the direct cause is we do not know. Something is probably worked out, and if so that something is probably gaseous, and, further, an oxidizable gas. These suppositions are supported by the fact that oxidation and its effect, boiling, removes almost completely those elements (silicon and manganese), which are known to have great solvent effect on the gases, allowing the free escape of the latter. The writer has with no good reason long suspected hydrogen to play a part here.

The tangible result is that a heat of soft plate steel made with a minimum of boil will have higher elastic limit and tensile strength with less elongation and reduction of area for a given chemical composition than one made with a lively boil, but in which the oxidation is kept under control. Steel oxidized still further and given a wild boil, but kept within workable limits as regards red shortness, has still less elastic limit and tensile strength, but less elongation as well, though such steel shows at times remarkably high reduction of area, the test piece drawing in greatly at one point when pulled. The finishing temperature at the rolls also has great influence in determining these physical properties, but is beyond the limits of our subject. Makers who work with more strongly oxidizing conditions must for a plate of given tensile strength aim for higher carbon than those who use oxygen more sparingly.

Our next variable, No. 11, shows the effect of the final additions, indicating the degree of oxidation before, and gives evidence in connection with all the other phenomena of the results which may be expected. This knowlege is utilized in varying the temperature and the time after additions in the light of lessons from the past.

The amount of the slag, No. 12, depends on the amount of dirt in the charge, the rate of melting, percentage of waste, quantity and quality of ore used and waste from the bottom. When it is large it acts as a fly wheel on boiling, making it slow to start and slow to stop, and in that way may mislead or cause trouble. Further, acting as a blanket, it will require the furnace to be kept hotter to maintain the metal at the proper temperature. It is usually accompanied with extensive cutting of the bottom, and is, generally, not a cheerful thing to see, especially in the basic process.

The color of the slag, No. 13, indicates the amount of free oxide of iron (probably Fe_3O_4) contained, and therefore the degree of oxidation to which the metal is being subjected, the black having the most and the yellow, perhaps, none.

The texture of the slag, No. 14, indicates this more fully. Earthy and crystalline slags are only black, while vitreous slags may be either black, olive or yellow. The texture varies much with the size of the test taken. The thinner the test the more likely it is to be vitreous. This extreme is met in slag tests taken on a small peel or spatula touched to the slag in the furnace and quickly withdrawn. The writer usually pours a cake on the charging floor plates, but in this case the thickness of the cake must always be considered. The slags of the basic process are always black and earthy, or should be for satisfactory work.

The composition before additions, No. 15, has, of course, with the additions, everything to do with the grade produced. The old method of determining the carbon, the only element considered, by fracture of the broken test, is fast being superseded by abridged chemical tests made at the furnace.

The quantity and quality of the final additions, No. 16, is determined by the composition before, and also the degree of oxidation in the metal and slag, as these determine the loss of carbon, manganese and silicon in the additions. The amount of these losses determined by the composition of the finished steel, No. 17, together with the time after additions, gives another criterion by which to judge of the previous history of the heat.

The action of the gases during teeming, No. 19, has much to do in determining the marketable fitness of the product. In grades of soft steel to be rolled the gases should evolve freely during teeming and setting. In hard steels and steel castings they should be kept in solution. The middle ground between these extremes is full of danger and unsound steel is likely to result.

At many works especial difficulty is met in making some one grade of carbon, all others, higher and lower, being easily produced. Their practice, particularly in reference to the degrees of oxidation maintained, but casting temperature as well, finds a carbon at which the gases neither escape freely nor are all kept in solution, and the steel as cast is unsound. Under this head comes for consideration "piping" and "rising" steel. We find in soft steel one kind and in hard another kind of pipe. In soft, very low carbon metal, with rather pronounced oxidation and absence of appreciable amounts of silicon or aluminum, the gases are so freely evolved in minute bubbles that they may form half the volume of a mold apparently full of steel at the end of teeming. Later, when this gas has escaped, the metal sinks down and leaves a hollow shell or pipe of

metal, which has chilled next to the mold. Basic steel is prone to do this.

Hard steel which pipes does so because of the shrinkage of the metal during setting and cooling. The gases are kept in solution by ingredients having that effect, and the loss of volume of the steel in setting for the whole ingot or casting is concentrated in the pipe.

Piping or incipient piping steel is to be desired. In soft steel a slight tendency to pipe is aimed at. This steel will rise a little just before the last of it has solidified, if allowed to do so, but it can be prevented and good ingots obtained.

Rising steel is that which increases in bulk after teeming, the result of the formation of bubbles in its interior which do not rise and escape. The casting temperature, No. 20, of such steel is too high, and this brings us to the consideration of the effect of temperature on steel. The trouble when this is too high is well known, but not the reason why. It seems to be chiefly from the effect on the gases. It is not easy to see how heat, *per se*, can work injury, but by increasing the solvent power of iron for gases to the point that they are evolved so slowly in the cooling steel that they cannot escape, being entangled, as it were, in the plastic steel, but yet not held completely in solution, high heat can and does exert a positive influence in making bad steel.

To make steel requiring the free evolution of gas in the mold the temperature must be as low as may be without giving a skull in the ladle. With oxidation rather high the limit of permissible temperature is raised, but red-shortness lies in wait to head off the melter who would use this agent freely to avoid close watch of the heat of his bath.

High carbon piping steel should not be too hot, as this increases the pipe. For steel castings high temperature is needed to insure filling all parts of the mold. The pipe must be guarded against by use of large risers or sink heads.

No. 21. Having the steel hotter than the casting temperature earlier in the heat has but little influence, except indirectly, by its effect on the slag. An abnormally high temperature melts from the roof, walls or bottom, or from all of them, a quantity of siliceous material in the acid process, which adds to the slag, changes its quality, makes it more vitreous, and so affects the work. In the basic process the siliceous material melted from the roof and sides is sometimes enough to destroy the dephosphorizing quality of the slag. The normal course of the temperature of a heat is to rise steadily until it reaches the proper degree for casting at the end. The weight of the charges, No. 22, has a bearing on the resulting quality. When the weight is below 10,000 pounds trouble is found in having the metal hot enough to cast properly without melting the furnace. The difficulty of this increases about inversely as the square of the decrease in weight. Below 3000 pounds a ladle cannot be used satisfactorily, but the metal must be run directly from the furnace to the mold. On the other hand, large heats cast into small ingots engender bad results somewhere. If the casting temperature is right at the beginning of teeming it will be too low at the end, and if right at the end too hot at the beginning.

The time of making a heat, No. 23, may or may not affect the quality. When abnormally long, due to bad furnace work, which may come from bad gas, badly designed furnace, bad draft or ignorance, the quality is pretty apt to be injured. A melter can hardly have had enough experience with this class of heats to know exactly what to do to keep the quality up to his best, though it may pass inspection.

A change in the melting stock, especially of the brand of pig iron, usually produces changes in the behavior of the charges which interfere with the refinements of the work. In ending, we must admit after all, that with all outward conditions as nearly uniform as may be no two heats are exactly alike either in their behavior in the furnace, composition, or physical properties. Increased skill reduces but does not eliminate these differences. The writer hopes that enough has been said to enable students of steel to see the importance of having more complete data of their subject than is usually found—that is, enough to indicate roughly at least the methods used in its production.

Beginners are advised to watch the effects of these variables as closely as they can until they become familiar with their meanings.

The New Westinghouse Compound Engine Governor.

Since the introduction of improved and sensitive machinery manufacturers have become more exacting in the matter of regulation of speed. Most particular in this respect are the electric industries, which highly appreciate in a governor an ability to handle great and instantaneous changes of load. After two years of invention and experiment, the Westinghouse Machine Company of Pittsburgh, Pa., have designed a governor for use with their high duty compound engine, whose efficiency they claim has never been equaled. The sectional views of the governor, Fig. 2 and 3, show at once its simplicity.

A heavy unbalanced eccentric and strap places the center of gravity of the combination very near the center of the shaft without sacrificing its strength. Short heavy springs, with low initial tension, are available in this form, and the governor is so compact that it is placed in a heavy closed case, which is completely filled with oil to insure certain and copious lubrication.

While the governor, as a whole, is very heavy and perfectly free to move, even through its whole range if necessary, its strength is a variable quantity and its leverage increases so as to meet and resist the greater strains of longer cut-offs. The principal feature of the governor, however, is its ability to utilize its inertia for the necessarily rapid adjustment to meet instantaneous changes of load. The mere tendency of the engine to change its speed to the degree demanded by the regulation on account of change of load throws the governor to the new position to suit such new load, and the force that changes the adjustment of the governor is inertia. Other governors, as a rule, are actuated by changes of centrifugal force alone, and consequently require heavy fly wheels with sundry attached mechanisms to keep them from racing under violent or sudden changes of load. Without these attachments the regulation is proportionately defective. In this governor centrifugal force is merely auxiliary. It has neither time to act nor is it necessary for it to do so in order to accomplish the result desired.

A test so severe that it would be but seldom met with in practice was made on an 18 inch and 30 x 16 inch Westinghouse engine with this form of governor at the station of the Federal street and Pleasant Valley Electric Railway Company, in Allegheny City, Pa., and *fac similes* of the indicator cards are here produced as evidence of the rapidity of the governor's action.

Card No. 4, taken under constant load and for one revolution, is given for comparison only.

Four circuits are driven by this engine, and in Card No. 5 one of these was broken while a continuous card was taken from the high-pressure cylinder. The card for one revolution from the low-pressure cylinder was taken after the change in load, and has no connection with the rest.

Card No. 6 was similarly taken while three of the four circuits were broken at the same time, and shows an average change of 87 horse-power per second. It also shows that the governor was perfectly stable in its new position. At this rate, the governor would travel over its entire range, corresponding to a change of its listed capacity of 250 horse-power, in less than three seconds, which is about the time necessary to increase the speed of the engine the amount demanded by the regulation, and with a lighter fly wheel this change would be made in proportionately less time.

It is evident, therefore, that with this governor the fly wheel becomes simply a balance wheel. It is no longer required in storing energy to delay the change of speed and thus give centrifugal force time to act on the governor.

Car Demurrage in the Valleys.

A dispute of considerable proportions has arisen between the members of the Pig Iron Manufacturers' Association of the Mahoning and Shenango Valleys and the railroads entering those places, and extended litigation is promised before a settlement is reached. The dispute has been brought about by the Mahoning and Shenango Valley Car Service Association announcing its intention of collecting car demurrage at law if necessary. At a meeting of that association held in Youngstown on the 24th ult. the following resolutions were passed :

Resolved, That the manager of the association notify each company or corporation indebted to the various railroads members of the association for car service charges that unless the charges are paid or satisfactorily adjusted on or before July 6, 1891, that suit will be commenced against them to enforce the collection of same. And be it further

Resolved, That all claims for indebtedness to each company shall be forthwith placed in the hands of the attorneys of the respective companies for suit or settlement on terms satisfactory to the manager of the association in pursuance of this resolution.

Copies of the above resolutions were sent to each member who was in arrears to the association. The district covered by the association extends from Wampum and Shenango in the east to Warren on the west and Letonia on the south, including all the shippers within those points. It was organized in 1890, and includes all the railroads in the two valleys. The iron manufacturers have unanimously decided to refuse to pay the demurrage charges. A meeting of the Executive Committee of the Pig Iron Manufacturers' Association of the Mahoning and Shenango Valleys was held in Youngstown on the 26th ult., and it was decided to call a meeting of the association during the present week to consider the matter. It is stated on good authority that the bills which have been rendered by the Car Service Association and remaining unpaid amount to $100,000 or more.

An ocean steamer built at Bay City, Mich., for the Pacific trade, is now on her way to the ocean. She is known as the Keweenaw and is built of steel. Her tonnage is 2512 gross and 2004 net. Her engines are of 1300 horse-power. Questions of cost largely figured in the selection of a building place on the great lakes for the vessel, and it is said that the Michigan builders stood ready to deliver her on the coast at a figure below the estimates of firms which launch their vessels in salt water. To get her through the canals between the lakes and the St. Lawrence she had to be cut in two and brought through in sections. Other vessels, it is announced, will follow her and will be dispatched to the Pacific Coast.

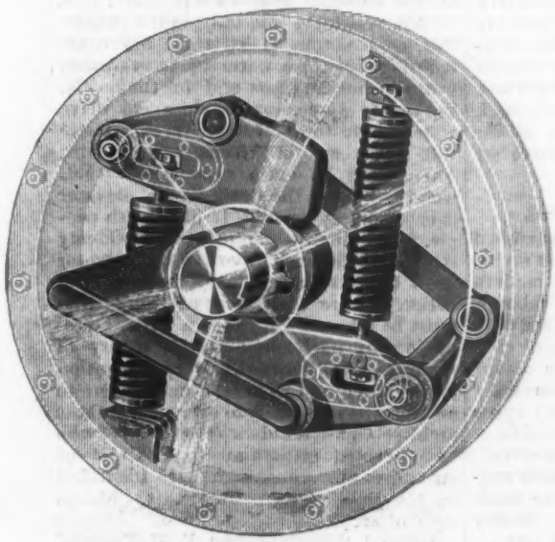


Fig. 1.—Showing Enclosed Governor Case to be Filled with Oil.

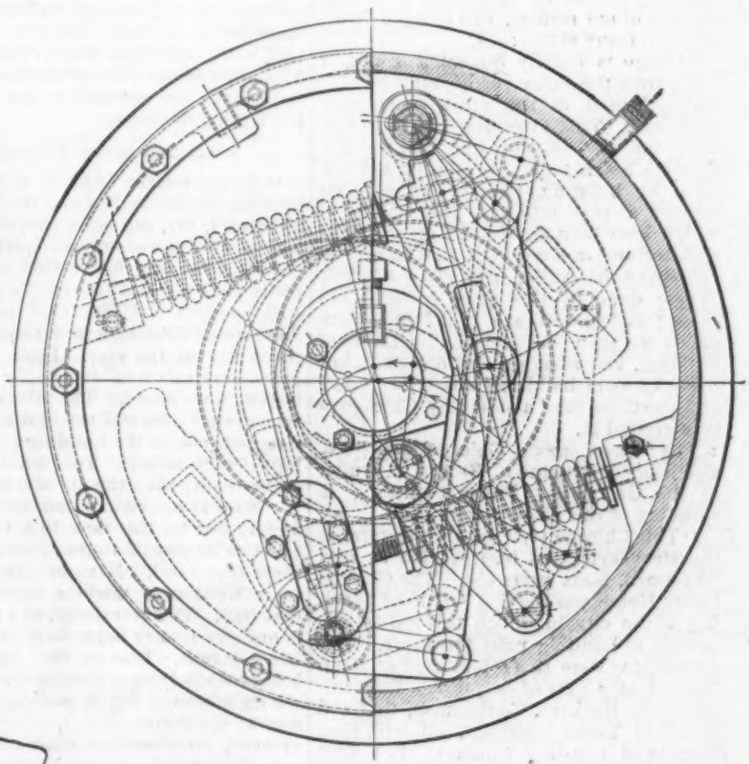


Fig. 2.—Part Sectional View, Showing Details in Two Positions.

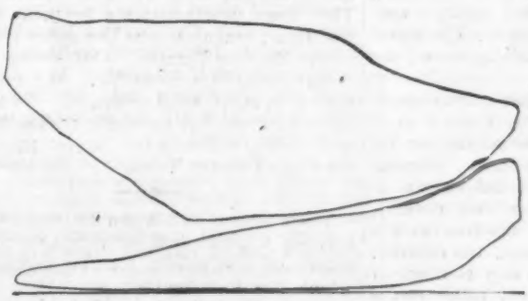


Fig. 4.—Specimen Indicator Card.

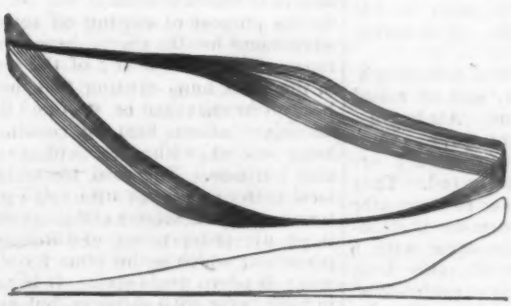


Fig. 5.—Indicator Card Continuous throughout a Partial Change of Load.

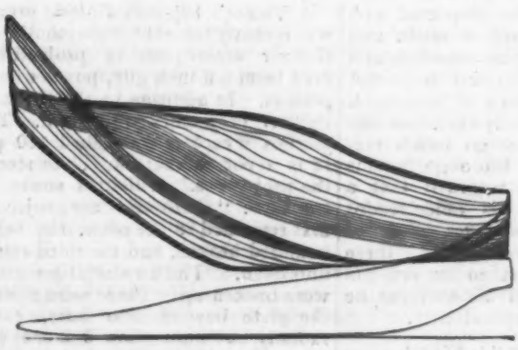


Fig. 6.—Indicator Card Continuous throughout an Extreme Change of Load.

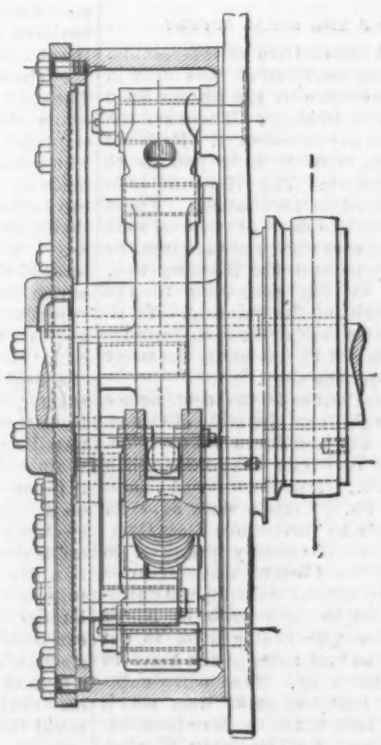


Fig. 3.—Sectional View, Showing Position of Eccentric.

THE NEW WESTINGHOUSE COMPOUND ENGINE GOVERNOR

Steel Structural Work in Chicago.

The following article from a recent issue of the Chicago *Tribune*, although treating of a subject thoroughly familiar to a large number of our readers, will be of great interest to many others:

Chicago is rapidly becoming a city of steel, from the enormous quantity of that material used in the great down-town buildings. This extensive use of rolled steel for the skeletons of massive sky scrapers has not only revolutionized the style of building, but it has as well created a new industry, the toilers at which have been classed and organized as architectural iron workers, to whose present strike the dailies have often alluded. Where does all this steel come from? Does Chicago roll any of it? Is it more expensive than the ancient method of building, and what precautions are taken to make steel buildings absolutely safe? are questions that almost any Chicagoan is interested in.

The pioneer among Chicago builders in steel-ribbed structures, George A. Fuller of the George A. Fuller Company, in speaking of this class of work, said:

"This Chicago style of architecture, as the steel-skeletoned business blocks may be termed, is six years old. The Chicago Opera House was the first fire-proof building in the city in which this radical departure in building rules was made. The floor beams were those first used of steel. The columns were of cast iron. Then followed the Rookery, Counselman, Gaff and Board of Trade buildings, all with steel beams and cast-iron columns. But steel is gradually replacing cast iron for columns. The Rand-McNally building was the first in which steel was used exclusively. But the Monadnock, Pontiac, Caxton, Kearsage, Northern Hotel, Masonic and Temperance temples, and the Fair building are all steel structures. The steel used besides the beams and columns is found in the frames of bay windows, roof work, supports for roofs—in fact, everything that assists in holding the weight of the building. The foundations also are of steel.

SOURCE OF THE STEEL SUPPLY.

"This steel comes from various points. Almost all the heavy steel rails used in foundations are made by the Illinois Steel Company here in Chicago. These are the regular rails in use on railways. Rails are made to weigh from 60 to 80 pounds to the yard in length. The 75-pound rails are the ones used in foundations. Those foundations are laid deep of tiers of rails crossed, and are extended always into the street or alley beyond the building line, the distance varying according to the hight and weight of the building. To illustrate: Under the fair building foundation rails reach out 12 feet under the street and 9 feet under the alley.

"Of the steel beams 90 per cent. comes from Pittsburgh, from the mills of Carnegie, Phipps & Co. and Jones & Laughlins. A heavy trade in beams is also done with Pottsville, Pa., Trenton, N. J., and Phœnixville, Pa. Certain sizes of steel beams are made by the Illinois Steel Company. They have recently prepared to compete with the Eastern manufacturers in new lines by adding a fitting and finishing department to their mills in North Chicago. This will enable them to cut beams, columns and rails, punch holes in them and fit them up. They will doubtless secure a heavy trade in lines which the company have not herotofore touched. I know they will, for here is an illustration of it: I just let the new Athletic Club Building on Michigan avenue to them, because they are in line to do the work. The steel columns will be furnished for that building by Witherow of Newcastle, Pa.

"As to the cost of this steel I can give you only general figures. Steel columns and beams are worth $75 a ton delivered in Chicago. The combination price of steel beams is $3 20 for 100 pounds, without any fittings, Chicago delivery. Small materials in steel for such as windows and roof work cost from 3 to 5 cents a pound. The price on steel varies but little, as the mills have an agreement and there are but trifling deviations.

WHAT THE STRUCTURES COST.

"As to relative cost of a steel-ribbed building to day and one of the best styled structures, say, ten years ago, the modern one is the more expensive, for labor is costlier now than then. But you see what really gave birth to this steel style of construction was the fact that none of the down-town Chicagoans wanted to leave the center of the city. Land and space grew more valuable and taller buildings became a necessity. The principal advantage of steel ones and the new style of construction is that the building can be made higher with safety. This style is lighter and stronger than the old method, too.

"Steel is succeeding cast iron. This is largely due to the fact that there is no practicable way of testing cast iron, while there is of steel. None of the manufacturers have ever made a machine to test cast iron. This seems odd, so long as there is quite a rivalry between steel and iron; but it is true. Cast iron columns are cast hollow while lying horizontally. The metal which is poured in, by running round the core to the bottom first, may press the core upward, so that on cooling the upper side of the column may be thinner than the under side. Again, there may be air bubbles form between two currents of molten metal. What inspection is made is to look for those two defects. One method to determine the thickness is to bore small holes through the column, but there is absolutely no way to discover those air bubbles. The only other test is to set the column on end and bring an enormous hydraulic pressure to bear on it. Cast-iron columns are fastened together in the building by bolts screwed on, while steel columns are riveted together in the building with redhot rivets. This makes the structure more solid.

"The manner of testing steel is thorough. The steel used is Bessemer, and is rolled under a tremendous pressure. Air bubbles stand no show. They are pressed out. The columns are not round. They are made in plate form and riveted. They can be seen on all sides so as to determine their thickness. The inspection is elaborate. We have a chief inspector with a force of men under him at all mills from which we purchase. He is a professional expert and reports to us daily. The inspectors take a quantity of metal out of each 'blow' and test it as to the quality of the steel it will make. If it is not up to the requirements we take no steel made from that 'blow.' It is inspected and tested again when the steel is made and again while it is being put together, and if found defective at any point it is not used. Again, every piece of structural steel is numbered; not only that, but the ore is designated that shall go into a certain piece of steel. So thorough is this followed in detail and recorded that a builder by referring to his office record can trace back the course of any piece of steel in a building through the three stages of inspection, back to its original ore shape. In case of an accident he could thus locate the responsibility.

PRESSURE STEEL WILL STAND.

"So much for testing the quality of the steel. Now as to the load to be placed on it. One of those inspections I alluded to tests the breaking power of the steel, and we never load a building above one-fifth of that breaking power. In calculating so as to insure safety, we figure first on the straight downward pressure, then on the resistance of the wind. Besides this, on the tops of all these big office buildings are great water tanks to furnish water to run elevators and for the bowls, as the city water pressure does not drive water to the top of sky skrapers. Those full tanks are of tremendous weight. There must be extra support for their weight. Then the strain on an elevator is enormous at times. If filled with people, it is going down rapidly and suddenly stops, the columns supporting that elevator must be extra strong or something will break. There are dozens of things that must be allowed for. It's a trade, a profession by itself, and there's plenty of room for thinking in it. Every precaution is taken to guard against accident and to assure safety; that is to say, among those architects and builders of the city who have devoted great time to this class of structures and whose names are identified in the public mind with this Chicago style of architecture."

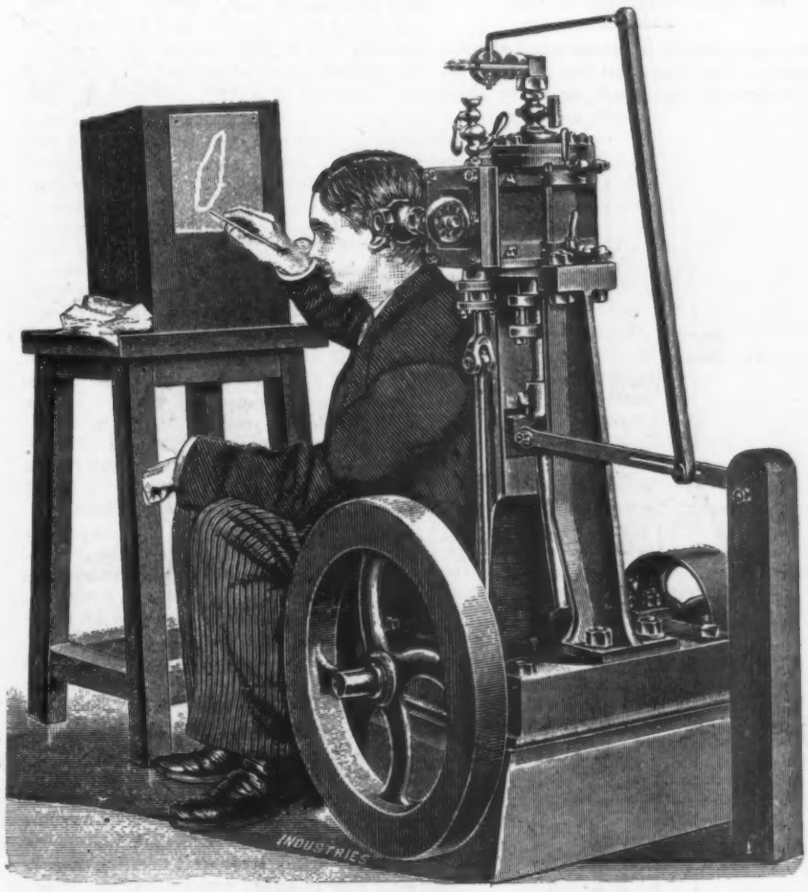
General Superintendent F. H. Treat of the North Chicago Rolling Mills of the Illinois Steel Company, said: "This company began rolling beams in 1888. Carnegie went into the business of steel beams in 1887. It's only recently that this company began preparing to go into the structural steel business extensively. They have now contracts for many large buildings, among others the upper portion of the Masonic Temple. Our fitting shop is just going into operation. We are preparing to make steel columns. We make up to 15-inch, but Carnegie makes a 24-inch beam, which is the largest made in the United States."

The Chicago and Alton Railroad is receiving a great deal of attention at the hands of the public for the manner in which it is fighting the attempt of other railroads to deprive it of its just share of business. Railroad associations are of benefit in many ways, but in the case of the Alton it would appear that the organization to which it belongs was being used for the purpose of cutting off some of its advantages for the special benefit of other lines. The Alton is one of the few lines in the West now existing that have not been overcapitalized or operated by over-ambitious officers bent on constructing a huge system without regard to profitable business. The road has an immense local patronage, built up by the wise fostering of manufactures along the line, and is greatly independent of through transportation, which is the plum for which so many Western roads seek. It is not only in high favor with shippers, but also with the traveling community, to whose convenience and comfort the managers are constantly adding.

A Vicker's 10½-inch all-steel armor plate was recently tested at Portsmouth. Three Holtzer armor-piercing projectiles were fired from a 6-inch gun, powder charge 48 pounds. In addition to the Holtzers two Palliser projectiles were used. The projectiles in each case weighed 100 pounds. It is reported that the plate stopped all the projectiles. A British account of the test says: "Of the Holtzer projectiles the first remained in the plate, the second rebounded broken, and the third rebounded unbroken. The two Palliser projectiles were broken up. There were no cracks in the plate beyond fine ones, extending radially not more than 5 inches from the inner edge of the fringe raised by the impact of the shots. This plate was the trial plate from those now being made by the same firm for the Centurion, and the trial was considered highly satisfactory by the officials present."

The Perry Steam-Engine Indicator.

In this device a beam of light is reflected from a mirror mounted upon an elastic diaphragm, which is distorted by the steam pressure upon its opposite surface. The path traced by the beam is a true diagram of the working of the engine. From *Industries* of London we take the following description and the accompanying cuts:



THE PERRY STEAM-ENGINE INDICATOR.

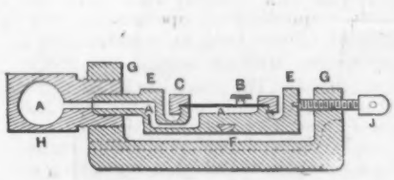


Fig. 2.—Longitudinal Section.

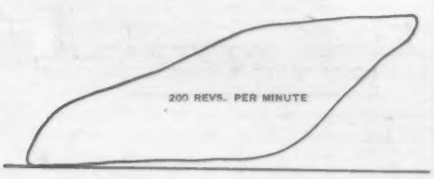


Fig. 4.

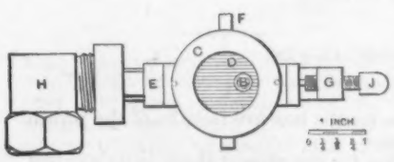


Fig. 3.—Plan.

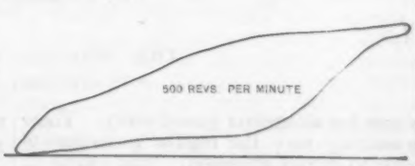


Fig. 5.

In 1885 Professor Osborne Reynolds read a paper at the Institution of Civil Engineers which did much to disturb our confidence in the general accuracy of indicator diagrams. In it attention was called to several serious sources of error, such as inertia of the moving parts; friction of the piston and the pencil gear; backlash and "give" in the pencil gear; temperature variations in the springs; inaccuracy in the springs; long and tortuous steam connections; stretching of the string; and want of correspondence between the motion of the paper and of the engine piston. These distributing elements give rise to very large errors, and even if we do not estimate them so high as Professor Reynolds, it must be admitted that the steam-engine indicator, with the usual arrangements for giving motion to the barrel, is not an extremely accurate instrument, even in its most improved form.

Apart from these features of inaccuracy the engine indicator is, after all, a roundabout sort of instrument to get a desired result. If an engineer wants to know the pressure in a boiler he looks at a direct reading gauge; but if he wants to know the power developed in an engine he fixes on an indicator, but this does not show the power at once. The engineer has probably to climb about to fix his indicator on the engine cylinder. If the engine be in a ship, and there is a big sea on, the experimenter in taking a diagram may tear several cards, and probably burn his fingers, and in some cases run a chance of being killed. After all this he has not got the horse power result, but merely a diagram. Additional observation of the speed must be taken, and the area of the diagram must be measured with a planimeter or other means. After doing all this, a result having some sort of relation with the power in one end of one cylinder is obtained, and several more operations, with their accompaniments, give the final results.

Professor J. Perry, F.R.S., of the Finsbury College, has set to work to improve these roundabout methods, and has produced the very simple and ingenious form of indicator which we illustrate in Figs. 1, 2 and 3. The piston and cylinder are discarded altogether. Instead of them there is a thin steel drum head, D. The pressure in the box A bulges the disk out a little, like the disk of an aneroid barometer or a Schäffer-Budenberg gauge. A mirror, B, is set about half way between the center and the edge. The pressure thus bends the disk and deflects a beam of light in one direction. The drum is moved in another angular direction by means of a lever, F, and this moves the spot at right angles to the pressure direction. The result is that the spot traces a true diagram of the working of the engine. The steel disk is so light and strong that its period of vibration is too high for its inertia to affect the diagram, not only of a marine or mill engine, but even to make a perceptible difference on a locomotive, a small gas engine or a high-speed electric-light engine. The barrel cord is entirely superseded by a rigid rod or connection, which does not admit of stretching or backlash.

The diagram formed by the instrument may be made permanent, as it can be traced over with a pencil. An oil lamp, with a large mirror, gives a very good "spot," and even at the slow speed of 60 revolutions it is easy to trace the form of the diagram. For many purposes, however, a record is not wanted. With the Perry indicator the engineer may not only have the water, boiler pressure, vacuum and other gauges in front of him, but he may have a visible indicator diagram also. He has not to perform a series of operations whenever he wants to know what is going on inside the cylinders of his engine, and he can watch the effects of any alteration of boiler pressure or of the valve gear without difficulty or trouble.

Professor Perry read a paper on his indicator at the Physical Society recently, and showed a number of diagrams taken by Mr. Holland, who has been engaged in working out some of its details. Fig. 1 shows a general view of the indicator as attached to a small engine; Fig. 2 is a longitudinal section and Fig. 3 a plan of the instrument. Figs. 4 and 5 are specimen diagrams taken with it, which were photographed by the light of an oil lamp after about a minute's exposure.

A change has come over the character of the immigration to this country. For the eleven months ending May 31 of this year the immigrants landed were of the following nationalities: Great Britain and Ireland, 108,831; Germany, 84,630; Austria and Hungary, 50,656; Italy, 45,837; Russia and Poland, 39,626; Sweden and Norway, 35,340; all other nations, 36,689. Thus only about one-fourth of the grand total (401,609) were English speaking, and Great Britain, Germany and France together sent less than one-half of all the immigrants. Instead of receiving the most desirable class of immigrants, as formerly, the reverse is true at present.

The Pollock Bosh Plate.

For over a year and a half Tod Furnace, at Briar Hill, has been equipped with the Pollock bosh plate, which has also been in use at the Grace Furnace, also in the Mahoning Valley. It is the invention of Thomas M. Pollock, who has aimed to avoid the chief objection to the ordinary forms of bosh plates that they afford no ready means for detecting the occurrence of leaks.

The bosh plate, Fig. 1, is a hollow metal casting having a diaphragm or partition, Fig. 2, which extends from the front end nearly to the rear end, and at its front end is curved outwardly, so that when set in a furnace wall the inlet and discharge holes 4 5 at that end shall be outwardly directed. The plate is built horizontally in the furnace wall in the usual manner and in order to provide for the circulation of water through it there is attached to the inlet opening 4 an elbow pipe or connection, 6, Fig. 3, having an open, upwardly-directed, funnel-shaped mouth. The supply pipe is set so that its end 8 shall be directed toward the funnel mouth, and that it shall be adapted to discharge water freely into the latter. The novelty of this arrangement of the water connections is that the supply pipe is not tightly coupled with the bosh plate, but that the inlet of the latter is open so that the water can be poured into it. The discharge opening of the bosh plate is provided with a pipe, 9, Fig. 4, which extends upwardly and is open at its upper end, and a discharge pipe, 8, leads downwardly from the side of the pipe, as shown in Fig. 3.

For the sake of economy in arranging the different bosh plates in the furnace wall, the ends of the discharge pipes 8 of the alternate plates of a vertical series are set directly above the mouths 7 of the respective bosh plates below them, so that the discharge pipe of one plate shall serve as the supply pipe of the plate below, from which lower plate the water flows through the discharge pipe into a gutter, 10, or other place of discharge.

If there should be a leak in the bosh plate its presence will frequently be revealed by steam and gas bubbling up through the open ends of the parts 7 and 9, but if this does not occur its presence can be determined readily by shutting the valves of the supply and discharge pipes. Then, if there be any leak in the bosh plate the level of the water will fall quite rapidly, and this fact can be noted at the open ends of 7 and 9. Another advantage is that as the water is not supplied to the bosh plate at high pressure, but simply flows into it, it will not rapidly force itself through any leaks which may occur in the bosh plate. In most cases the internal blast-furnace pressure, being greater than that of the water, will prevent the outflow of water at the breaks in the casting. When sediment from the water collects in the passage of the plate sufficiently to impede its cooling action and to make it liable to burn out, a stream of water may be forced through the plate, which will clean it thoroughly. This is made possible by the relatively large size of the water inlet and outlet pipes employed.

Experiments are being made at West Troy, N. Y., for the production of a new kind of fuel, and the experimenters have succeeded in making two varieties. Both are the results of a combination of waste materials, and the best one is composed principally of waste from the Mechanicville pulp and paper mill. It is nearly pure carbon and by further cleansing and a subsequent chemical process it is converted into a product which is capable of nearly perfect combustion, combining rapid development with intense heat in a manner suited to general uses, such as the generation of steam, smelting, soldering and welding, and with the unpleasant effects of burning ordinary bituminous coals reduced to a minimum. It is intended to erect a plant at Mechanicville, N. Y., for their manufacture.

Our San Francisco Letter.

The slight flutter of excitement attendant on the Kerr trial, and the attempts of the molders to get back again to their places has altogether passed away. There is nothing save the regular pulsations of trade to attract attention. The course of trade of late has not been satisfactory. For the most part it has been voted dull, slow and unsatisfactory. The only thing that can be said is that it is better than it was a year ago, but that is saying only little. This is true not only of all departments of the iron and hardware trade, but of nearly every line of business. A calm review of the various reasons urged for the depression brings me to the conclusion that the bad winter of 1890 is mainly responsible for the situation. After all is said and done wheat and barley growing form the mainstay of California's agriculture. The fruit growers, though becoming more numerous every day, are still far and away in the minority and for years they will be. We have had three bad wheat seasons—the last the worst of all—and the farmers of the State cannot recover from their ill fortunes in this respect in a day. That is, it seems to me, the principal cause of California depression. It is satisfactory, however, to be able to state that the country had never as good prospects before, not since the banner year 1880. Some even think that they are better than they were that remarkable year. Then it goes without saying that the iron and hardware industries will be the first to participate in the general access of prosperity, so that we look forward to a very satisfactory business for the last five months of the present year.

But for the present there is no comfort. A leading foundryman to whom we spoke the other day declared that business was very dull. He said that the molders' strike had nothing to do with it. Twenty years ago San Francisco might be termed the Metropolis of the Pacific Coast, everything came here. Then the mines were active and new machinery and that suited to the new mining situations was in constant demand. To-day, however, the Northern Pacific cuts off our Northern trade, and the roads leading into Southern California our Southern trade. We are left only the central portion. Here, too, we are met by Eastern competition. There are half a dozen large houses engaged in the importation of Eastern machinery, &c.

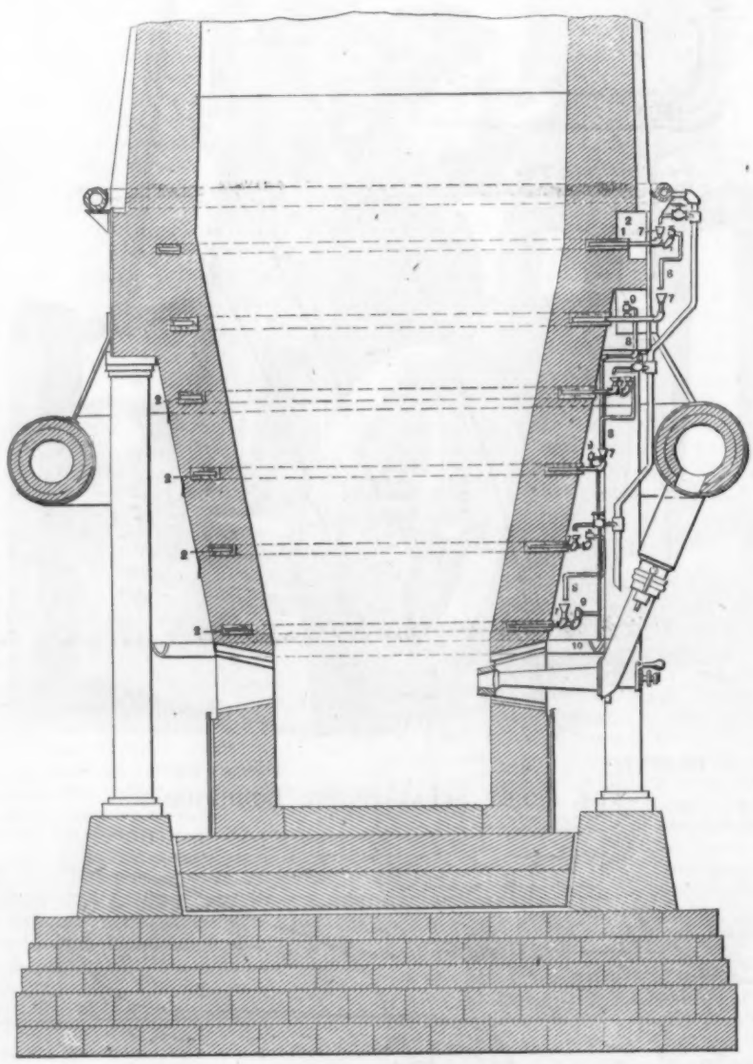


Fig. 1.—Section of Furnace.

THE POLLOCK BOSH PLATE.

Then a Chicago firm is now engaged in bidding on contracts, so that we are pushed close on every hand. Another foundrymen who has figured somewhat conspicuously in the ranks of the engineers and foundrymen said that outside of something special there was not an engine made in San Francisco to-day. There are now 21 foundries working, 12 non-union and 9 union. The iron trades at present employ about 2500 hands. Of these, about 1000 are in the Union Ship Yard, 600 to 700 at the Pacific Rolling Mills Works. When times are brisk, however, there are about 4500 men, boys, &c., employed.

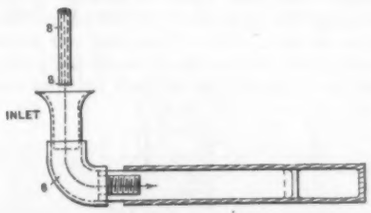


Fig. 3.—Inlet Pipe.

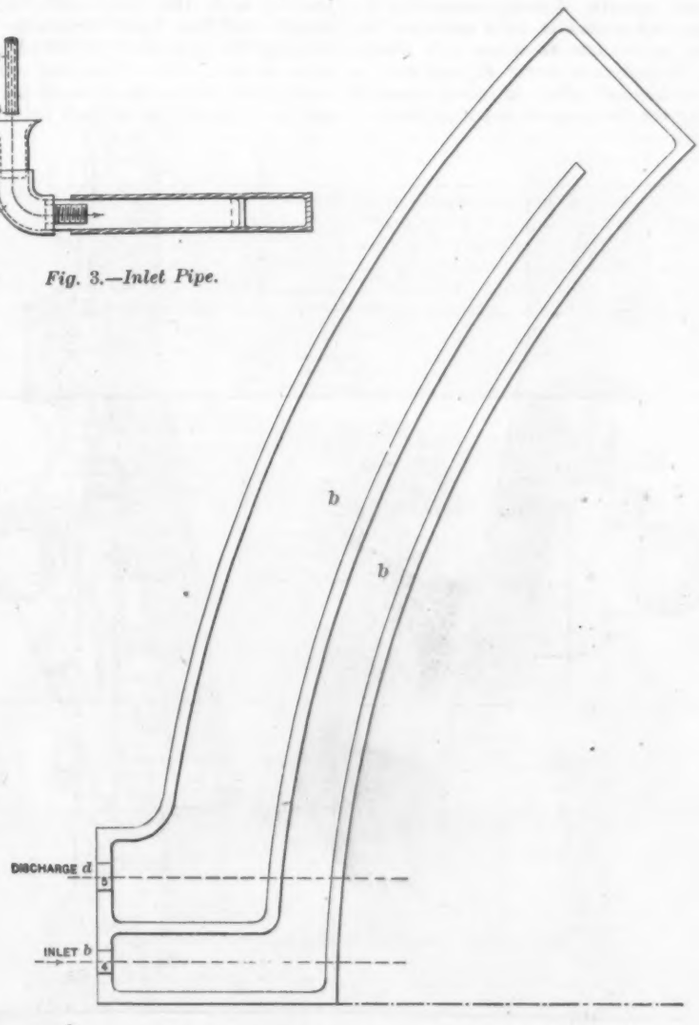


Fig. 2.—Section of Bosh Plate.

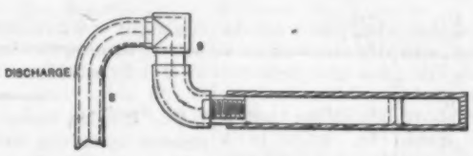


Fig. 4.—Discharge Pipe.

THE POLLOCK BOSH PLATE.

Considerable preparations are being made for the fall campaign, as evidenced by the imports of the past few weeks by rail. The count gives 95 full car loads. Of these there were 20 cars of iron, 20 of machinery, 16 of hardware, 10 of steel, 10 of wire, 7 of stoves, 5 of pipe, 3 of agricultural implements, 2 of reapers, 1 of ranges and 1 of wire cloth. By sea, the Port Stanley had 12,360 boxes of tin plate and 25 tons of brooms. The Joseph S. Spinney had a large quantity of merchant iron, 50 tons pig iron, and 100 tons of muck bars. The Auriga brought 555 tons of muck bars. The Steamer San José had a large quantity of hardware by way of Panama. The Socotra from Cardiff had 450 tons of scrap iron and a lot of steel blooms.

The late heavy importations of tin plate have been a striking feature of the trade here. For the first five months of the year the imports at this port were 22,565,190 pounds, valued at $811,484, and selling in this market at $1,309,000. Entries during the present month have been very heavy, on one day 1,250,000 pounds having paid duty at the Custom House in this city. During the past two weeks we have had 8700 boxes by rail. This drove the market temporarily down to $6.35; it has since gone up again to $6.50, and to-day to $6.60.

Of pig tin, we had 3274 ingots by the Mariposa. The market here is quiet at 20 cents. We have had 200 kegs of nails by rail, but imports for the year by sea have been quite large, say 23,000 kegs. The local market has dropped twice since June 1; once on June 6, and then again on June 17. The rate is now $2.85 for iron cut, $2.95 for steel, $3.45 for wire. In carload lots, $2.70 for iron, $2.80 for steel, and $3.35 for wire, and 2 per cent. off for cash.

(By Telegraph.)

The first complement of "red card" molders, ten in number, has arrived in this city. The matter created great excitement among the striking molders. They tried all possible means to intercept them *en route*, but failed. They reached the Union Iron Works on the tug boat Rescue from Port Costa at 5.30 p.m. Before entering the yard, President Valentine of the local union broke through the ranks of the police and succeeded in making an impassioned address to them. He could not produce much impression, however, as the men here present took the places of the red-card men on strike in Chester, Pa. Henry Scott of the Union Iron Works and Captain Taylor of the Risdon were mainly instrumental in bringing them out here. The probability is that these are only the advance guard, and that in this way the question of the strike, as far at least as the foundrymen are concerned, has been effectually settled. An immense crowd witnessed the debarkation of the red-card men.

LATER.—Yesterday it seemed as though the red-card molders offered a solution of the molders' strike in this city. However, out of the ten who arrived six have succumbed to the wiles of President Valentine of the strikers, and the outlook is not so good. The molders' strike is admitted by conservative unionists to have been a mistake. In speaking to one to-day he expressed the opinion that the strikers, originally believing in their invincibility, had been trying to carry things with a very high hand, and that they would now be content to make a very reasonable compromise Indeed, he thought that, considering the way the red-card molders were treated by the others in Chester, they were not to blame in taking the places of the white-card men here. The foundrymen here have no intention of taking back the strikers on condition of recognizing the union.

The report of H. W. Bland, the auditor in the assigned estate of the Reading Iron Works, Reading, Pa., which made an assignment in March, 1889, has been filed. The fund for distribution was $550,260.02, and there were claims presented, outside of the mortgage for $600 000, amounting to $1,266,083.40. Of these claims that of Virtue C. Sweatman of Philadelphia and that of the Hunter estate of Reading, amounting to $51,674.24, were rejected, leaving the amount of proper claims $1,214,409.16. To these, after deducting expenses, the amount in hand was distributed pro rata, the dividend amounting to 45.1874 per cent. The large claim of the Reading Railroad Company for $140,000, for which judgment had been given, was vigorously fought by the other creditors under the claim that it was not entitled to participate in a lien, but should only participate in a pro rata distribution, but it was sustained by the auditor. The contests will now probably be carried to the Supreme Court. There is quite a large amount of real estate yet remaining to be sold, which will yield another dividend to the creditors. The mortgage bond holders did not make any claim upon the fund, as they considered their security on the real estate ample.

A San Francisco paper notices that there are 53 sailing vessels *en route* to that port from all parts of the world, consigned to the sugar firm of J. D. Spreckels & Bros.

Machine Belting.

In the shop no factor is found of more importance than the belts and the work they have to do, from the large 60-inch power transmitter to the little 1 inch belt that drives the speed lathe or drill; and, at the same time, speaking generally, no part of the shop is so much neglected. In the belting trade, as in all others, cheap or inferior articles are constantly on the market, and the desire to cheapen in purchasing is also ever constant. Combine the two, and the result, a loss greater than the advance in price in the first-class article over the inferior.

When a belt is to be applied, a good one should be obtained, and then pains must be taken that it is put on properly. The first point is that the ends be cut at right angles to the side of the belt, and that the lace holes be punched in two rows, perfectly parallel to each other, with the holes in each row opposite the center of the space between the holes in the row in opposite one. This insures an equal strain on all parts and prevents the tendency to run off the pulley which a belt unevenly laced has. If this rule is observed the basis for proper application is reached. By practical experiment it has been proven that a belt applied grain side to the pulley has about 34 per cent. more efficiency than when the flesh or rough side is the one of contact. Notwithstanding this fact, it is safe to say that fully 50 per cent. of the belts running to-day are running smooth side out, or with the flesh side next the pulley. Then, again, with the grain side in, a belt will not crack; reverse it and it is sure to, the elasticity in a belt being on the flesh side. As close a contact as possible is desirable between the belt and the pulley.

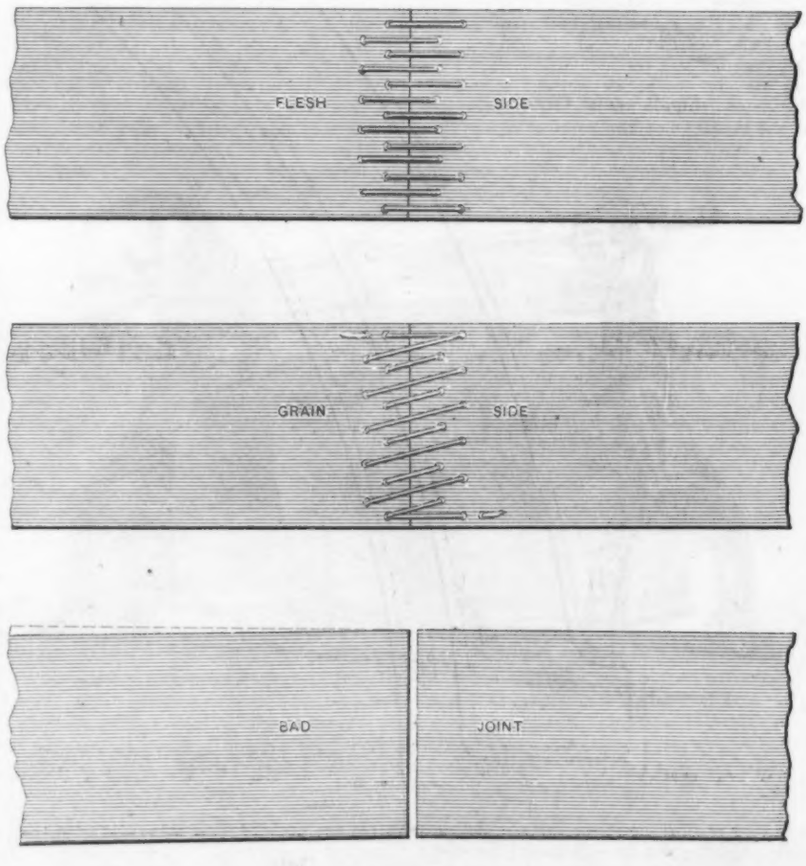
In lacing, the lace on the side next the pulley should always be parallel to the edge of the belt, and never under any circumstance should it be crossed on this side. The accompanying illustration shows a belt improperly joined; also shows lacing on both sides of belt, with the arrangement of lace holes. Care should be taken not to lace to tightly, as there is nothing to be gained and much to be lost. It is wiser to get a heavy belt and run it loosely than to get a light one and find it necessary to strain it to its utmost in order to make it work. The result in the latter case is the ruining of the bearings, by running out the babbitt, by friction, twisting the shafting out of line and consuming a good many more tons of coal during the year than would be done were the bands properly adjusted. In perpendicular belts, the rule is that a high tension is necessary to get effective work, but it will be found in many cases that a slack belt will do the work as well, and wherever a slack belt can be used there is an item of saving that is by no means small. Horizontal belts should be run slack, with the driving half on the lower side of the pulley, when practicable. Then when it stretches the upper or falling half will sag covering more and more of the pulley, thus having a greater surface contact and correspondingly more power.

Fayerweather & Ladew of this city in a small treatise on belting recommend that whenever practicable pulleys be covered with leather, as they claim that by doing so 50 per cent. more efficiency is attained, and in proof of same they give the following table, compiled by them from practical experiments made.

"The per cent. of resistance of bands on different pulleys is nearly as follows:"

	Per cent.
Iron pulley covered with leather.....	36
Iron pulley, polished.....	24
Iron pulley, rough turned.....	15
Wood pulley, polished mahogany.....	25

In regard to the proper care of belting a few words cover the ground. Belts should be kept soft and pliable, as if allowed to go without attention they will, like any piece of leather, harden and crack, and the life of the belt will soon leave it, making it practically useless. They should have as much attention as a fine set of harness, and be kept properly softened by use of a proper preservative. For this purpose Post's Waterproof Belt Oil and Preservative is an excellent thing when applied as directed, and not only renders the belt soft and smooth, thereby increasing the friction, but makes it, to a more or less degree, impervious to water and dampness. Neatsfoot or castor oil may also be used with good effect in cases where a dressing for the purpose is not at hand.



MACHINE BELTING.

It will be found that when the work to be done is in a hot and dry atmosphere a coarse, open belt will give the best results, as it is non-pliable and less likely to crack under the above conditions than a close-grain band would be, while in a damp or moist place nothing but the finest leather should be used. A new belt will stretch if it is a good one. A belt that will not stretch has lost its life and will not wear. A belt, like a shoe, to be a good one must accommodate itself to its work. It is a mistaken idea that a belt is inferior because the necessity arises to cut out a piece and relace it. It is a good sign and speaks for years of service provided proper attention is given it.

In calculating the width of belt required, the following rule may be used with satisfactory results, as published by Fayerweather & Ladew: Multiply 36,000 by the number of horse-power, divide the amount by the number of feet the belt is to run per minute, divide the quotient by the number of feet or parts of a foot in length of belt contact with smaller drum or pulley, divide the quotient by six, and the result will give the required width in inches.

As an example of the lack of knowledge in regard to capacity and work that a belt will do, we repeat the words of a large manufacturer: "We received an order for a 60-inch three-ply belt, to be used as main driver. In due time the belt was delivered, and run nearly a year, when one evening the night engineer came on duty and, contrary to orders, threw on the whole machinery, while the engine was at full speed. The result was that the main belt jumped with the extra strain on it, and struck the floor beam overhead; a bolt sticking through cut 20 inches off the belt in an instant. The remaining 40 inches worked its way to the crown of the pulley, and for 15 years that 40-inch belt has been run night and day, transmitting 500 horsepower, turning 80 times a minute, from a 27 foot fly wheel to 12-foot receiver."

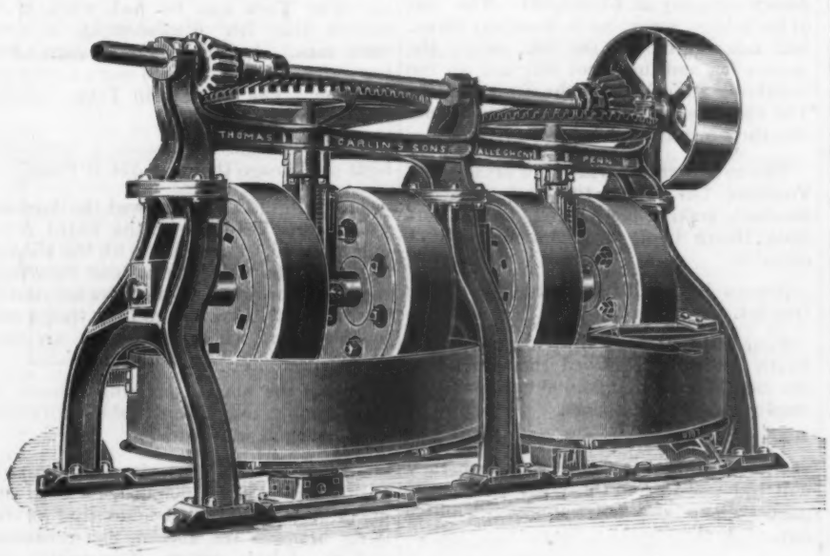
The Russian Government has definitely entered upon the work of constructing a great trans Siberian railroad. The cost of this work is estimated to be about $135,000,000, but is quite likely to exceed $200,000,000 before the road is completed. Although the railroad is built mainly for strategical reasons it is estimated that when completed its uses for trade purposes will be sufficient to pay interest on the cost of construction and running expenses, with a possible deficiency of about $1,250,000 per annum. This margin of loss the Government feels that it is justified in assuming in consequence of the imperial advantages which would result from this improved means of transportation.

The imports of iron ore into Great Britain have fallen off heavily. During the first five months of the year the imports were 1,411,603 tons, against 2,124,258 tons during the corresponding period in 1890.

Clay-Grinding Machine.

The accompanying engraving represents an all-iron grinding machine, having two dry pans in the one frame, and on one foundation. It is a very strong and well built machine, weighing about 90,000 pounds; the pans themselves are heavy with deep arms, so that very heavy rolls can be used for grinding hard or refractory clays and material. The patent rolls have long bearings, and the tires are easily replaced; the false bottom in the pan, as well as the tires, are made of a special hard mixture of iron which is claimed to be far superior to chilling.

The vertical shaft is wrought iron, and the pans are forced on and are supported by a collar forged with the shaft; the pinion shaft is of large diameter, the gearing is heavy and is 8 inch face and of a proportion of 7 to 1. The top cross piece is in one heavy casting and makes three bearings for the pinion shaft and two bearings for the vertical shaft, thus keeping all the shafts in perfect alignment. Provision is made for taking up the wear of the bearings of the vertical shaft; there



THE CARLIN CLAY-GRINDING MACHINE.

is also provision made for raising the pans without going underneath them with jacks, and the steps can be examined or changed by raising the pan ½ inch; the foundation is also designed than these bearings can be examined while the machine is in operation. Anchor plates are also furnished on which the foundation is built, they being at right angles to the base plates on which each machine is built, thus tying the foundation in every way and giving the machinery every advantage of the masonry. The offset shown in the base plate is made to receive the elevator, which delivers the ground material into the storage bins to the screen, or into the brick machine, as the case may be. These machines are especially adapted for fire brick paving works where a large output is desired; they are covered by patents and are built by Thos. Carlin's Sons of Allegheny, Pa.

The United States Iron and Tin Plate Company of Demmler, Pa., have been granted a charter, with a capital stock of $500,000. The directors of the new company are: Henry H. Demmler, Louis F. Demmler, of Pittsburgh, Pa., Albert J. Demmler of McKeesport, Pa., Edward Ely of Philadelphia, Pa., and Wm. C., Cronemeyer of Versailles Township, Allegheny County, Pa. This new concern succeeds to the business of the United States Iron and Tin Plate Company, Limited, who have a rolling mill plant at Demmler, Pa. The new concern is simply a change of the company from a limited organization to an incorporated concern, the capital stock at the same time being increased from $300,000 to $500,000. This firm are manufacturing tin plates and have made this change in their business with a view of going more extensively into the manufacture of this class of goods.

THE WEEK.

One of the most remarkable natural phenomena with which this country has been visited was the peculiar downpour of rain which devastated the northwestern portion of Iowa on the 24th ult. A flood is one of the natural occurrences in a mountainous or even a hilly country, but a flood in a flat country where there are no deep ravines or hill fringed water courses is a most unexpected event. Yet in this case a great wave was caused by the heavy downpour of rain, which swept away all buildings in its course and destroyed many lives. It is accounted for on the theory that a great fall had occurred in the temperature of the air all over the inundated area, which suddenly reduced the capacity of the air for sustaining moisture. Immense damage was done to railroad property in the section visited by this so-called cloud burst.

By the abolition in Canada of the import duty on raw sugar the government loses $3,000,000 per annum.

Borings along Broadway in this city to bed rock proved unexpectedly favorable to tunnel construction for rapid transit. At Canal street, 68.25 feet below the surface, the rock was covered by a stratum of coarse gravel where a tunnel can be driven at the rate of 15 to 20 feet a day.

The National Congress of Chili passed resolutions unanimously sustaining Balmaceda. The new Congress has been in existence since April 20.

It does not appear that the principal European banks are so very strongly fortified in gold, notwithstanding the recent addition of more than $60,000,000 from the United States. The Bank of England exhibits for the twelvemonth a gain of $33,122,320 gold, the Bank of France for the same period shows a gain of $2,104,474 gold, and the Imperial Bank of Germany from estimated figures shows an increase of $33,148,000 gold. The three banks show an increase for the twelvemonth of $68,374,794 gold.

Steamship men await impatiently the offering of bids for sea service under the new Postal Subsidy bill passed by Congress three months ago.

Estimates of the Brazilian coffee crop of 1890-91 have diminished from 5,000,000 to 2,200,000 bags, on account of disorganized labor.

Grain room to Europe by the steamship lines is engaged well ahead for the coming fall.

It will cost $9,478,547 to run the City Government of Brooklyn during 1892. This is $948,007 more than the expenses this year.

Cotton fires on shipboard, it is safe to affirm, are generally due to spontaneous combustion caused by the contact of the fiber with vegetable oil. Cars transport cotton seed oil and the fiber alike, and the oil is readily absorbed, producing exactly the conditions favorable to starting a fire.

Flour for export is being shipped by canal from the West in sacks of 280 pounds, saving one-half the freight charged by rail.

R J. Hinton, special agent in charge of the irrigation inquiry, says that the great Colorado plateau can possibly be made arable by means of irrigation, thus adding 50,000,000 acres to the arable area.

The Bureau of American Republics has issued a circular to merchants engaged in the South American trade, calling attention to the unprecedented opportunities offered by the Columbian Exposition at Chicago in 1893, which it is proposed to utilize by making as complete an exhibit as possible of the various classes of merchandise best adapted to the wants and most acceptable to the tastes of the people in Mexico, Central America and the West Indies.

A check has been placed on silver coinage. According to Secretary Foster's statement, made after a cabinet meeting last Friday, the Administration has decided to suspend the coinage of standard silver dollars from bullion now being purchased in order to recoin and render available the $5,000,000 trade dollar bullion which has been carried as an unavailable asset of the Treasury. The Department will also proceed to recoin as much of the subsidiary silver coin as may be necessary to meet the demand for various denominations, and thus make that asset available.

The commercial treaty with Spain has been signed, and goes into operation September 1.

Ten companies are investing in lands in Southern India.

Nebraska expects to gather the largest wheat and corn crops in the history of the State, and predicts a new era of prosperity.

Old-time prices for linseed oil result from sharp competition.

New Orleans papers remark upon the failure of cotton planters to co-operate in reducing the area of the new crop more than to a quite limited extent, and concede that the "big crop has come to stay."

The Hamburg American steamer Fuerst Bismarck, reported at Southampton, 25th ult., made the passage in 6 days 13 hours and 10 minutes. Allowing for the difference in distance between Queenstown and Southampton, which is 16 hours, the Fuerst Bismarck's latest run is equivalent to a passage from New York to Queenstown in 5 days, 21 hours and 10 minutes. And this, the Hamburg-American Steam-

ship Company announce, is the fastest eastward transatlantic passage ever made by any steamship.

An expert in underground roads says the main objections to underground travel in London can be obviated by modern inventions here. There need be no smoke when we have electric lights, an electric cable and compressed air motors. As to fresh air in the tunnel, it can be forced in faster than the travelers in it can take it up.

President Pellegrini of the Argentine Republic is hopeless of any metallic basis of circulation in that country other than silver.

The United States cruiser Philadelphia, on her last trip from Hayti, was able to sail only 14 knots an hour on account of the poor quality of Welsh coal obtained in Jamaica. This country has no coaling station in the West Indies, so that no relief was possible.

The crude idea prevalent in the West concerning Government financiering is shown by the following extract from the address of Senator Peffer of Kansas, delivered last week in Cooper Institute: "There is need of several things. One is more money, another is cheaper money. I don't mean money that is not good for anything. We want good money. I don't care what kind, but an abundance of it. We want it at a lower rate of interest than we are now paying. Bondholders can get money at 2 per cent., but the farmer cannot get it for less than 10. We are going to equalize that thing if we have to revolutionize the whole country. We mean to make our own money and plenty of it. That is just what we did during the war, and we can do it again. We shall not destroy the money of the rich. We shall not touch a dollar of it. We simply propose to make more money for ourselves. Are not the farmers' lands as good as the National banks' bonds?" The Kansas senator will be satisfied with nothing less than shinplaster 50 per cent. currency, "just like that we had during the war." To pay debts with that would be even better than cheap silver dollars.

A prominent cabinet officer closely connected with the United States Treasury, having been accused of ill-advised expressions reflecting upon the public credit, more particularly with reference to the silver coinage question, a contemporary remarks with some pertinency that "with the Treasury gold fund at the lowest point since the silver agitation of six years ago, and with silver certificates representing a larger percentage of the Government receipts from customs, and gold certificares a smaller percentage than for a long time past, it is a very inopportune time for outgivings from Washington calculated to cast the slightest doubt on the conservatism and soundness of the methods to be followed in the administration of the finances."

The transcontinental railroads having, as alleged, adopted an arbitrary course in reference to freight charges, the scheme of establishing a steamship line around Cape Horn is again under discussion.

The new sugar season in Cuba, just finished, shows a satisfactory yield. The estimate is 800,000 tons.

Manitoba and the Northwest promises fully 25,000,000 bushels of wheat.

A *habitue* of Wall street, just returned from a long tour through the country, thinks the advice, "Go West, young man," is out of date.

Henry Villard, who has been ruined several times in the past few years, is once more a financial power, and cherishes a vast scheme of consolidation of all the Northern railroad interests, and a part of the plan is the building of a magnificent city in Washington, which shall eclipse the commercial emporium of California.

The United States Chief of Ordnance has been authorized to construct some of the new 12-inch rifles of 40 calibers length. The extreme length of these heavy guns so far designed in the United States has been about 36 feet. It is calculated that the harbor of New York alone will require for its absolute protection, according to existing plans, 53 guns varying from 13 to 125 tons, besides a few dozen heavy mortars. Sites for the new batteries will soon be obtained, but to manufacture the guns is the work of years.

The latest step in the progress of the work of connecting New York and Jersey City, by means of a bridge across the North River, is the practical completion of plans for a union depot to be erected on the west side of Broadway between Thirty-seventh and Thirty-ninth streets. This depot is to be 400 feet wide, extending from the north side of Thirty-seventh to the south side of Thirty-ninth street and 1300 feet long. The New York company is capitalized at $10,000,000 and the New Jersey company at $5,000,000. The cost of the bridge, according to Secretary Swan, will not exceed $12,000,000, while the approaches and the depot will use up the remaining $3,000,000 of the capital stock. The viaducts will be of steel and stone, like the superstructure.

The new French twin-screw steamer La Touraine has joined the fleet of record breakers, making her first trip to this port from Havre in 7 days, 3 hours and 11 minutes.

Nassau has added metal roofing to the free list.

Four-fifths of the tin-plate works in South Wales have closed their doors for one month, throwing 25,000 hands out of employment for that time.

Texas farmers are so prosperous that this year, according to a Galveston paper, they will bid good-by to the credit and mortgage systems and enter upon a brighter day.

It is estimated that the decline that has taken place in the price of cotton, equal to an average of 3½ cents per pound during the year, entails a loss to the planter of $148,000,000 on the entire crop of about 8,500,000 bales. But the planter loses only that which he never had.

The tables have been turned on the clothing manufacturers in Rochester, N. Y., since the conviction of Master Workman Hughes, 21 of their number having been indicted for conspiracy.

The growing of Sisal hemp in Florida promises important results.

The first of two fine cattle ships, built expressly for the Atlantic trade, has arrived at this port from England. There is room aboard for 900 head of cattle, 300 on each of the three decks, and there is room in the hold for 3500 tons of other freight. The hatches are protected by large side guards that will keep the sea out and at the same time let in plenty of fresh air.

Nine steamships carrying 4000 passengers sailed from this port on Saturday.

Silver bullion is a better security for circulation than silver dollars of less intrinsic value, because better protected against depreciation. So argues the New York *Press*, which says: "Take away the intrinsic value that secures them and substitute for it a partially fiat value, liable to depreciation, and public confidence in the soundness of our currency will be so far impaired. Instead of actual value to secure a paper dollar, the Treasury will have a silver dollar that in part needs to be secured itself. The country has had quite enough of that kind of currency issued at the rate of $2,000,000 a month. It does not want that kind of currency expanded at a rate of between $4,000,000 and $5,000,000 a month." But is the silver dollar "liable to depreciation?" The admission concedes too much, even as an hypothesis.

Another big cotton crop in some quarters is not regarded as an unmixed blessing.

Spring wheat promises well everywhere and corn is growing rapidly.

The directors of the New York, New Haven and Hartford Railroad were acquitted by instruction from the Court, on the ground that the evidence did not show that they were liable for the violation of the Car-Stove act.

The big armored cruiser New York will be the next new vessel of the navy to be launched. The New York is building at the yards of William Cramp & Sons of Philadelphia. Some idea of the size of the New York can be had when it is known that her displacement is over 8000 tons. In length she is some 380 feet. The New York will carry a crew of 475 men. The battle ship Texas should follow the New York.

Mexico promises to make a better exhibit at Chicago than she did at Paris.

The Knights have renewed the boycott placed three years ago on the Third Avenue Railroad, in this city, with the alleged object of thwarting, or at least delaying, the cable project. Difficulties are liable to arise both in the building trades and in the shops where mechanics are employed.

Two of the manual training schools in Philadelphia make a creditable exhibition of ornamental iron work.

A company has just been organized, with a capital of $1,000,000, for cultivating a farm of 112,000 acres in Florida, lying between the Indian, San Sebastian and St. John's rivers. Cocoanuts and sugar cane will be the principal production.

The great Havemeyer Building, to contain 300 offices and to be 14 stories high, which has been commenced on Church street near Dey, will be built largely of iron.

The Fourth avenue railway tunnel, in this city, will be ventilated on a new plan.

The Argentine section of the Transandine Railroad, which, crossing and in part tunneling through the Andes Mountains, is designed to connect Buenos Ayres and Valparaiso, is being rapidly pushed forward, in spite of the financial troubles in the Argentine Republic and the revolution in Chili. One of the most difficult tasks yet to be accomplished is the drilling of the summit tunnel, 3 miles in length, which it is estimated will take three years to complete. Work already accomplished leaves a gap of only about 50 miles in a total distance of 850 miles between Valparaiso and Buenos Ayres which cannot be traversed by railroad, and shortens the period previously occupied by the journey from 12 days to less than three.

The Mexican Government, by extending what is known as the "Gulf system" westward through Durango to the port of Mazatlan on the Pacific, will have a line of standard-gauge railroad across the continent, with headquarters at Monterey.

The Iron Age

New York, Thursday, July 2, 1891.

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CHAS KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

A Dull Period Well Ended.

The spring of 1891 will probably be memorable for years to come as the worst period through which the American iron trade has passed since 1878. It is scarcely possible that the condition of affairs thus recently experienced will be repeated or even closely approached in the current decade. We have had a conjunction of disturbing influences both foreign and domestic, of a character most unusual, due largely to the culmination of a series of gigantic speculations which now happily have no immediate successors. A fresh crop of investors will have to be grown before another such harvest can be gathered as that of the Argentine Republic. It was decidedly unfortunate that the crisis in Argentine affairs should have occurred just at the time when American iron and steel works were expanding at an unprecedented rate to meet the requirements of American consumers, for the chill of financial stringency in the world's business centers was felt more acutely than if merely a moderate volume of business had been in progress. But to make things still worse, we were in the midst of changes in tariff duties, which caused enormous purchases of foreign goods to be made in anticipation of the imposition of advanced rates. Heavy balances had to be paid abroad, because these purchases were made at a season when our exports are usually light, and the withdrawal of gold has been a serious drain on the country's resources, notwithstanding the claims of our financiers that we were not feeling it.

The country is to be congratulated on the fact that these conditions have been met and endured without embarrassment to the great business interests. The failures that have occurred have not been greatly in excess of those of former years, when no disturbances of international financial relations occurred. Looking backward, the perilous nature of the channel through which we have just passed can be clearly seen. Our experience shows how cautiously changes should be made in tariff duties affecting great interests, whether in advancing or reducing them. Other matters are to be carefully considered besides the mere effect on those immediately interested as merchants or manufacturers. Possibly the ablest student of finance might not have been capable of pointing out the exact result of the huge importations of foreign goods hurried over prior to October 1, when part of the new tariff went into effect, and for the few months just prior to the 1st inst., when another part went into effect, because no man could have foretold in September of last year that in November London would be in the throes of the worst financial panic seen in a quarter of a century, and that for the greater part of the following year the rest of the world would be called upon to help bear the burden.

These disturbances are now happily about over. The large purchases of tin plate may not be entirely paid for, but the amount still due abroad cannot be large, while increasing exports and diminished imports will soon improve the tone of our international trade relations. The fine crops of this year will make their influence felt in increasing power in all the channels of domestic trade from this month on until late next spring. If there ever was a time when good trade is to be expected, with, of course, a heavy demand for iron and steel, that time is now at hand. Money will flow into the country and not out of it. The heavier our importations were for a time, the lighter they will be for months to come, and it would not be surprising to see a buoyancy in financial circles this autumn to which they have been wholly unaccustomed at that season.

Although there may be a very much better demand for iron and steel, it is hard to see any reason for expecting a marked advance in prices. A sudden rush into the market of a great host of buyers would undoubtedly cause sellers' views to stiffen materially, but buyers are inclined to be conservative, and whether they are dealers or consumers they have been so educated to low prices that they will not willingly pay any considerable advance over present rates. This was shown quite plainly in May, when heavy season contracts were placed by numerous Western consumers. For a brief time there was every appearance of a revival of activity, and manufacturers began to advance their rates to correspond with the better tone of business. They not only checked fresh buyers from coming in, but also caused negotiations to be dropped which would have been terminated in contracts at the old rates. An era of low prices has been established and it will be very hard to change it. The manufacturers who are too hasty to put up prices when the demand improves this summer or fall are likely to find themselves losing orders then just as they did in May.

The successful introduction at the works of the Springfield Iron Company of the Hennin fuel-gas process possesses more than local interest. Proof has been furnished that the system devised by Dr. Hennin will furnish fuel gas practically as a by-product, the cost of coal, of conversion and of interest on plant being covered by the revenue obtained by the recovery of ammonia and tar, with a margin of profit. We have only lately called attention to the fact that the utilization of the gaseous products of coking has not progressed very rapidly in England, although it is generally understood to be much further advanced on the Continent. But so far as we know no serious or successful attempt has been made to obtain ammonia and tar from producer gas. On the contrary, the tarry products have been quite generally regarded as a nuisance, and no one has seriously considered the ammonia. We are informed by good authority that the commercial and technical results obtained warrant the statement that the fuel gas may be regarded as a by-product, that it costs nothing. The significance of this result to iron manufacturers in many sections of the country can hardly be overrated, since it places them on a footing of equality with those sections which have until recently been so much favored by the possession of natural gas.

Compound Locomotives of Different Types.

An interesting discussion on the relative value of different types of compound locomotives took place at the recent Convention of Master Mechanics. The remarks were of unusual importance, because they described the work done in this direction by several of the most prominent locomotive manufacturers in the country, and because they gave a detailed account of the performance of several styles of compound engines now in every-day service. Mr. Vauclain of the Baldwin Locomotive Works held that it would be wrong for them to try to compound all the engines in the two cylinder manner, since with a 22 or 24 inch high-pressure cylinder there would not be road width sufficient to put a low-pressure cylinder on one side of the engine. They had, therfore, adopted the four-cylinder arrangement having a high and lower pressure on each side. The advantages of this method are enumerated as follows: The receiver is done away with; there is an improved expansion of steam from one cylinder to another, and as the cylinders are governed by one valve, the starting gear is entirely done away with. Another essential point is that if the engine breaks down on the road the disabled side can be tied up and the engine brought in with the other side. Experience with these engines has shown that there is no difficulty whatever in starting a train. A compound engine of this type was recently tested on a grade of 100 feet to the mile and having 9° reverse curves. The engine worked most satisfactorily. Cards showed that there was an almost entire absence of back pressure in the low-pressure cylinder, and that the drop in pressure from the high to the low was very small. The water rate in a standard engine varied from 26 to 30 pounds, while in the compound it was 17 to 21.

Concerning the economy Mr. Vauclain said:

If the exhaust is violent you draw much coal through the tubes, you are bothered with sparks, you have got to clean the extension front two or three times in a run of 100 miles. We ran for three weeks a compound locomotive without being required to clean it. Some of the railroads have spent a good deal of money to get rid of those sparks. We get rid of them

by keeping them in the fire box and burning them up. That is an additional economy. We found in all our tests an economy of fuel much higher than the economy in water. When we took this engine on the Pennsylvania road we compared it with the standard class "R" engine. When coming from Harrisburg to Altoona we used with a full train 13,000 pounds of coal. The locomotive which followed with five cars less in its train used 26,400 pounds of coal.

In regard to the best ratio of cylinder volumes, Mr. Vauclain thought that the most benefit would be derived with a ratio of 1 to 3. The Baldwin works use, for a compound equal to a cylinder 21 inches in diameter, high-pressure cylinders of only 13½ inches in diameter. A two-cylinder compound would require a low-pressure cylinder 36½ inches in diameter, and the question was asked, Where are you going to put such a cylinder, and what are you going to do with your truck frames?

Mr. Vauclain objected to receivers, because any design that allows the steam to expand in space before it acts upon the piston takes from the power of the steam. He thought there was a very appreciable loss of power from one cylinder to the other. The economy arises from the fact that there is a great reduction in cylinder condensation, the high-pressure cylinder always being nearer the temperature of the steam admitted to it than is the cylinder of an ordinary engine. The greatest economy is in freight service; when the speed increases the economy decreases. In experimenting with a compound it was found to use very little more coal on a grade than on a level.

The other side of the question was taken up by A. M. White of the Schenectady Locomotive Works, who defended the two-cylinder compound. The first compound they built was a ten wheeler for passenger service on the Michigan Central Railroad. This has been running 18 months and proved so successful that another of similar design was put in service a year ago and is now pulling the heaviest and fastest train on the road. The percentage of saving in fuel for nine months of a ten-wheel compound over a ten-wheel simple engine on the East Tennessee, Virginia and Georgia road was 22.55. The saving in cylinder oil was 38 per cent. Mr. White gave other instances where two-cylinder compounds had proved to be most economical. He said that the argument brought against the two-cylinder compound—its inability to come in on one side in case of a breakdown—had no foundation in fact, as these engines had been run with only one side without trouble.

Mr. White dwelt upon the four-cylinder type as follows:

Need I say anything about the unmechanical device of hitching two piston rods to one crosshead when the pressure upon them is unequal at times? Will the crosshead wear well? Need I say anything in regard to the complication and the care required for four pistons and rods when two should suffice? The assertion has been made that the pistons and rods would break on the large cylinders—this is only another misstatement. Also that the high piston speed attained by the use of small wheels for freight was very objectionable; this has not proved so. Objection was made to the receiver. Now, we consider this a good thing, and it is so considered by the most prominent mechanical engineers who have looked into the matter thoroughly.

The statement has been made that the four-cylinder type is necessary because there is not room on the railroad for the spread of cylinders required by the two-cylinder type. The absurdity of this statement may be better understood when we reflect that some of the largest compounds in use have inside cylinders. This is only a question of mechanical design, which we feel abundantly able to take care of.

A peculiarity about the three and four cylinder types is that none of the men having them in charge can be induced to talk favorably about them. The usual explanation of this is that railroad men are always prejudiced against improvements. Those who build the two-cylinder type find no trouble to get railroad men who use them to give expression of the faith that is in them.

The discussion made prominent one fact—namely, that the compound engine, whether of two, three or four cylinders, is much more economical than the simple engine. It was also shown that the compound is well adapted to general service, whether passenger or freight, and to roads having sharp curves and heavy grades. The compound locomotive is too near the infancy stage to settle conclusively the best cylinder arrangement; this question will only be adjusted by extended use and close comparison of results of each of the types.

The Conference of October.

The published correspondence between authorities representing the United States and Canada respectively with reference to the development of trade between the two countries shows, as has appeared heretofore, that the month of October next was mutually agreed upon as the time for a formal conference preliminary to negotiations which may terminate in the establishment of relations more satisfactory than those which now exist. The general subject of reciprocity in trade is commented upon freely in the leading Canadian journals, suggested by this opportunity, and both parties in the Dominion at least assume to be hopeful of favorable results. The Government organs, to propitiate the Liberals, who so fiercely opposed the late Premier, would emphasize the fact that it was upon representations from Ottawa that overtures for reciprocal trade were instituted early in the controversy the Imperial Government concurring. Therefore, it is argued, the present ministry is not averse to the extension of trade within certain limits; but it appears later that extreme difficulty may be experienced in finding a common basis for negotiations upon which all can stand. There should be no obstacle, the Ottawa authorities intimate, save only in this respect, that the United States must not insist upon "sacrifices by Canada intolerable to a free people, and inconsistent with their political integrity and independence. Short of surrender of control of the tariff, or of discrimination against Great Britain," says the ministerial organ, "the Dominion Government stands ready to treat for such an arrangement as Mr. Blaine desires."

Just here is the rub. While the Ottawa Government would make it understood that "a common tariff along the seaboard" is not permissible, the Government at Washington in like manner would have it understood that unrestricted reciprocity and "a Canadian tariff raised to a level with our own" are indispensable. Moreover, Ottawa and Washington are alike coquetting for the trade of Jamaica, Trinidad, Barbadoes, &c., and under such circumstances any trivial event might lead to unpleasantness and early estrangement.

Manufacturing in the World's Fair.

The directors of the World's Fair, at Chicago, are reported to have decided that there shall be no manufacturing in the Manufactures Building. This structure will contain only the manufactured products. It was generally thought that the contrary would be true. But the plan now is that all manufacturing must be done in the buildings in which raw materials are displayed. For instance, while cotton goods will be exhibited in the Manufactures Building, the process of weaving the same must be looked for in the Agricultural Building. Diamonds and other precious stones will be exhibited in the Manufactures Building, but the arts of the lapidary will be shown in the Mines and Mining Building, since diamonds are a product of mining. The same is true of all other classes of exhibits. The idea at present is that there shall not be a single wheel turned in the Manufactures Building.

This is a very absurd decision. Many machines can, of course, be exhibited motionless and visitors will not expect to see them in operation. Farm machinery is a case in point. There are other machines, however, and perhaps they are in the great majority, which must be shown in motion to enable visitors to get a proper conception of their method of operation or of the principles involved in their construction. Under such a ruling as this the Manufactures Building would be apt to lose exhibits of a great deal of very interesting machinery, as exhibitors would not send two sets of machines—one for show in the Manufactures Building and one to be put in operation in some other building.

The American Tube and Iron Company of Middletown, Pa., have received an order for the Matheson joint pipe from the Sandwich Islands. The demand for this pipe is increasing greatly, and the American company are shipping large quantities of it to Pacific Coast and Northeast and Southeast points. They will shortly figure on a large line of it for Mexico, and contemplate some extensive deals in South America. At present they are working on a pipe line to convey gas to Chicago from the Indiana field. Outside of these special lines, they report trade in general as rather quite.

CORRESPONDENCE.

Southern Steel.

To the Editor: In your issues of June 4 and 11 a correspondent of yours—"a leading mill manager"—severely criticizes my article in the Birmingham, Ala., *News* on the proposed Ensley Steel Plant. As by his discussion the attention of a large interested public, Northern steel makers and Southern investors, is directed toward the Ensley plant, I consider it my duty to partly accept, partly repudiate, the remarks of your correspondent. My article was never written for publication; it was to serve as a guide to undetailed drawings by which I wanted to give my ideas about a long-agitated question to the promoters of the enterprise. I never have posed as an engineer, being only an iron and steel works chemist, and errors in calculating on construction are partly due to that, partly to the fact that no large construction and machine works will make any quotations unless they expect an order.

That Northern steel makers do not like to see a 400 to 500 ton plant in the South is as easily conceivable as that they ridiculed $9 pig iron, an undisputed fact now. Mr. C. wants to prevent "some harm being done," but the harm may be on the other side, when it will be considered that basic open-hearth billets with 0.04 phosphorus are worth $32 per ton when common Bessemer billets cost $26. Even with Mr. C.'s too high figures of self cost, $25.79 per ton of billets for continuous direct process, a fair profit can be realized. To his complete consolation in regard to "harm" I will state that (1) the process has already been carried out, and below my figures at that; (2) that many of the promoters of the new enterprise are connected with the Southern Iron Company, who operate the basic-steel plant at Chattanooga. As they have one converter and two basic 20 ton open hearths, they can and will probably give the problem a thorough test at the above works before raising $200,000 for an "experience account." But the main point is the one that Mr. C.'s estimate of cost of production is far too high.

The quality of the pig iron can only be improved for the special purpose by aiming at large production—viz., making gray forge and No. 3 foundry, thus reducing the Si somewhat The hard Red Mountain ore has the average composition: Metallic iron, 40 per cent.; silica, 9.5 per cent.; lime, 14.5 per cent., and gives with Pratt coke 3300 pounds per ton of iron, an average slag of silica, 37; alumina, 14; lime 45, without any limestone. But silica and lime vary so much—unfortunately, both in opposite directions—that the only means of keeping silicon low, an addition of limestone, is very dangerous. However, if Mr. C., assisted by a chemist in Birmingham, who claims similar things, will show the Birmingham district in general and the people at Ensley in special how to make low-silicon pig iron, say with 1.5 per cent. silicon and less than 0.08 sulphur, regularly out of hard Red Mountain ore only, he will be a great benefactor, but I am afraid "some harm would be done" by that experiment to the furnaces as well as to Mr. C. I had the same idea when I came to Birmingham two years ago, but have been compelled to abandon it by practical observations. The fact is that the Henderson Steel and Mfg. Company could not obtain suitable pig iron for one 13-ton basic open hearth, offering an extra price for it. The demand was there, but no supply to speak of.

My estimates are based on the condition that the blast furnaces furnish the iron at my figures, "delivered" to Bessemer department. My idea is to bring the direct metal track level with the converter platform and the blown metal track level with the open-hearth platform, thus avoiding all hoists. I describe the ideal process as follows:

Every 90 minutes an engine will bring three 10-ton or four 7-ton ladles of metal, which must be absolutely free from blast-furnace slag and accompanied by a small fracture test cast into sand (or into a chill), to give an idea of the silicon and sulphur contents for each ladle. One ladle is emptied into the Bessemer converter and blown for such a time as is required to remove nearly all or all the silicon, some or most of the carbon. The sulphur will stay the same, the manganese will all be oxidized, go into the slag with considerable iron; besides, some iron will be partially lost as scrap. About 10 per cent. will cover the loss here.

The blown metal is poured into a ladle mounted on a truck, drawn by a locomotive. As soon as the converter is emptied, the next ladle of pig iron is poured into it and treated the same way, and so on. Pig iron can be kept to stay liquid four or even more hours easily. The ladle which brings it will be weighed full and when going back empty, and the difference credited to the blast furnaces as pig iron. Should there be not sufficient supply of pig iron in liquid state, two cupolas will melt pigs. Should there be more iron furnished than used at the open hearth, it can be poured into chills in an adjoining cast shed and stored for further use at the open hearth. Mottled or white pig iron may be best treated in this manner all the time to insure uniform distribution of the sulphur. Sundays or during stoppages of the Bessemer plant the blast furnaces would cast as usual.

The blown metal will be brought to the charging doors of the open-hearths (four to six in number); two converter charges of 10 ton converters, or three of 7 tons, poured in at the necessary time, will make a 20-ton heat of steel. By using liquid blown metal five to six heats, by using chilled blown metal three heats, of steel could be made in 24 hours.

Mr. C. calls my figures of cost at the Bessemer department "absurdly low." I call his much more "absurdly high." I shall confine myself to only one instance at this department. I counted for desilicizing direct metal per turn:

1 foreman		$4.00
1 locomotive engineer		3.00
1 fireman		1.80
1 weighmaster, 1 helper	These to pour the metal into converter	2.50
		1.50
1 blower		3.00
1 ladle liner and bottom maker		3.00
1 helper		1.50
1 pulpit boy		1.50
1 engineer for blowing engine		3.00
1 assistant of above		2.00
1 water tender		2.00
1 stoker		1.25
5 laborers at $1 each		5.00
Total, per turn		$35.05

Mr. C. has fully $180 per turn for the same work. I would like to know how he is going to employ about 90 men per turn, at an average of $2 per day, having no pit labor, no cupola labor, no molds to handle, none or very little scrap, &c.

I take the steam for the blowing engine here alone, hydraulic power with the necessary boilers counted at the open hearth, as besides the converter hydraulic rack I have only a bottom jack and no other cranes to use except for handling bottoms and ladles for drying, the blown metal ladle being on a truck. He places the steam at $63 (90 cents per ton of coal), against my $20 ($1 per ton of coal). I may be too low, but he is too high. I took a 400 horse power blowing engine, figuring on a wide converter with no high column of metal to blow. Suppose though 600 horse-power were necessary here at 4 pounds of coal per hour per horse-power $= \frac{4 \times 24 \times 600}{2240} = 26$ tons of coal per 24 hours.

Repairs, interest, &c., he takes at $275. I figured the same amount of interest, but repairs and refractories will be exceedingly small here. As to royalty, $1 per ton, I am very skeptic about the validity of the patent. J. Reese has a patent, sold to the association with his other patents probably, but there may be some prior one.

The recorrected cost for direct pig iron direct blown metal would then be as follows:

500 tons liquid pig iron	$5000
Labor	90
Steam	40
Repairs, interest	150
General charges	30
450 tons of blown metal at $11.80.	$5310
My figure before	11.50.
Mr. C.'s figure before	13.78.

I am informed that Birmingham No. 3 foundry and gray forge have been desilicized, from cold pig iron to cold, chilled, blown metal, at a cost of $2.65 per ton in a very small plant that ran single turn only and made but 50 tons per day. The blown metal contained about 2 per cent. C. and 0.25 per cent. Si. Mr. C's figure for this is $4.68 per ton on a 500-ton plant (without counting the chill handling). My figure is $2.20 for this work—probably not far from the true cost, when the above 50-ton instance is considered.

For pouring blown metal into chills, &c., I figure 20 cents per ton. I would make use of a chill mold similar to the Aiken hydraulic mold described in your issue of July 10, 1890. The carrying, breaking, grading, loading—in fact, all the labor after casting—amounts to 35 to 40 cents per ton on 500 tons divided over four blast furnaces at Ensley. Only half of that labor would be necessary here. Consequently I called it about 20 cents.

In the item for blooming Mr. C. deducts 12 per cent. for crop ends, but gently slips over the duty of crediting these crop ends with some money value. They are quoted at Pittsburgh $18 per ton in the same issue, and may be worth as much here to a steel foundry or tool steel works, being very low in phosphorus. I count $2.20 for all the costs in blooming including scrap and loss. So the recorrected estimate for all direct working may be:

Blown metal, per ton	$11.80
Ingots	19.80
Blooms	22.00

As far as the theory of the process is concerned, I am well aware of Mr. C.'s point on the relation between carbon and phosphorus. I therefore said: "The metal is blown for such a time as is required to remove nearly all or all the silicon, some or most of the carbon." I think it is not the carbon which is essential for dephosphorization. It is the point of keeping the bath boiling and having a tetrabasic (not only tribasic) slag. Of course if the carbon is nearly all removed the boiling will be caused by a small pig addition, as too much ore would over-oxidize the bath. But if the blown metal should come in with about 1.00 to 0.80 carbon, plenty of time is given to remove 0.6 phosphorus. I have a test before me now of a heat where the carbon was 0.10 or less and the phosphorus 0.20. Three hundred pounds of pig iron with 2.5 per cent. phosphorus and not over 4 per cent. carbon added to 40,000 caused a boil, but this could not raise the carbon above 0.12, but would raise the phosphorus contents materially also. About 800 pounds or more of limestone, however, were added, the slag being not quite basic enough, and in one hour the phosphorus was reduced to 0.04 per cent. Should it finally be proven—the savants still disagree on the point—that carbon is essential for dephosphorization in the basic open hearth (I do not believe it), it would be an easy matter to recarbonize the blown metal before pouring it into the open hearth, or to recarbonize in a manner similar to the Bolton patent (carbon in a sheet-iron box introduced in the furnace) in the open hearth itself. The blown metal referred to above, with 2 per cent. carbon, 0.6 phosphorus and 0.2 silicon, worked very well.

At any rate the blown metal will be hot enough after the removal of fully 2 per cent. silicon to be poured easily into the open hearth.

Mr. C.'s experience with a heat taken from cupola through open hearth does not show anything, as the very desilicizing will raise the temperature of the metal sufficiently. Mr. C brings Wedding's and Thielen's remarks. They are entirely in my favor and not well to be doubted. How can they dephosphorize basic iron, blown in a basic converter down to 0.3 per cent. phosphorus, which cannot contain over 0.08 per cent. carbon at Hoerde, if Mr. C.'s theory is correct? If they do it once, it can be done again.

The white and mottled pig iron may be used in small quantities for "pigging back;" the rest of these grades could be thrown into the converter with too hot high-silicon heats. A steam injector in the converter blast would prevent too hot heats, thus avoiding the complete decarbonization before eliminating the silicon.

As to cost of plant, I wish to remark that bids have been made to erect a plant similar to the one proposed by me which are considerably below my estimates taken all together.

The items cannot fairly be discussed without drawings, especially the Bessemer department. It may be sufficient to say that my figures were only given approximately. My figures agree quite closely with those of Gr. Curtis, which appear in the same issue of your paper in which they are called too high; they are, if anything, higher than Mr. Curtis' estimates. The omitting of the machine shop was intentional, as it was supposed that the Linn Iron Works department of the Tennessee Coal, Iron and Railroad Company would be moved to Ensley to serve as construction and repair shop for blast furnaces and steel works. The $250,000 experience account in 18 months is a pretty good scarecrow. Finally, I stated that half the calculated profits would be a satisfactory gain. Assuming the billets cost $24 per ton to make, in place of $22, and that they sell at $26, there would be a profit of $2 per ton, or on 450 tons $900 per day, making on the basis of 200 working days $180,000 per annum, or 18 per cent. on an investment of $1,000,000, or a better profit than most Northern mills will realize under the same trade conditions. But, I have to repeat, basic open-hearth steel is worth $4 to $6 per ton more than Bessemer billets.

For placing the product it is the intention of the promoters of the scheme to build a plate mill, to assist the erection of tin-plate and wire-rod plants. For making basic pig iron in the blast furnace economically the Birmingham district has not sufficient quantities of suitable cheap ores. Southern, Northern and foreign capitalists have found that out to their grief several times. To import Bessemer ores from Cuba, the Orinoco River, Europe or Africa, via Pensacola or some other suitable port, would then seem more profitable than bringing basic ores to Birmingham. Basic pig iron could be brought to Birmingham from Tennessee and Georgia; but all that is not what Birmingham wants and needs. It wants the conversion of the abundant "Red Mountain" ore into steel; and this can only be accomplished by the duplex process.

Mr. C. brings Punch's remark about marrying. My answer is "Bange machen gilt nicht." G. L. LUETSCHER.

CHATTANOOGA, TENN., June 18, 1891.

The H. H Perkins Mfg. Company of Kewanee, Ill, who put on the market the Perkins Corn Husker, report a very brisk trade. They have recently increased their capacity and intend to push the sale of their husker into new territory this season.

The Amalgamated in the East.

A good deal of uncertainty exists concerning the magnitude of the movement initiated by the Amalgamated Association of Iron and Steel Workers to force the rolling mills of the East to sign the scale, of which we printed the leading features in the last issue of the *The Iron Age*. We have telegraphic replies from the leading mills in Eastern Pennsylvania and New Jersey, which we believe pretty clearly define the situation. We are advised that the scale has not thus far been presented to the following concerns:

Potts Bros. Iron Company, Pottstown, Pa.
Glasgow Iron Company, Pottstown, Pa.
E. & G. Brooke Iron Company, Birdsboro, Pa.
Oxford Iron and Nail Company, Oxford, N. J.
Pottstown Iron Company, Pottstown, Pa.
Boonton Iron and Steel Company, Boonton, N. J.
Blandon Iron and Steel Company, Blandon, Pa.
Ellis & Lessig Iron and Steel Company, Pottstown, Pa.
Dover Iron Company, Dover, N. J.
New Jersey Steel and Iron Company, Trenton, N. J.
Passaic Rolling Mill Company, Paterson, N. J.
Alan Wood Company, Conshocken, Pa.
Trenton Iron Company, Trenton, N. J.
Allentown Rolling Mills, Allentown, Pa.

Some of the concerns alluded to report to us that even if the scale had been presented to them, they would not sign it. Others refer to the fact that the relations with their men are entirely satisfactory to both parties.

The only two concerns to whom the scale has been presented are the Catasauqua Mfg. Company of Catasauqua, Pa., and the Pottsville Iron and Steel Company of Pottsville, Pa. The former telegraph us: "The Amalgamated scale has been presented and will not be signed by us. This mill has been a non-union mill for 25 years."

The latter wire us as follows: "The Eastern scale was presented to us, but we will not sign it."

The American Sheet Iron Works, at Easton, Pa., while they have not had any scale presented to them, report that they are paying Amalgamated rates for puddling. It is generally believed among Eastern iron manufacturers that the Pencoyd strike has pretty well settled the question for this section.

The New Eureka Furnace.

The Eureka Cast Steel Company of Chester, Pa., have just started a new open-hearth furnace. The furnace, producers and stack, &c., were all finished on time, but the delay was caused by the unavoidably late arrival of the 12-ton crane, built by the New Jersey Steel and Iron Company of Trenton, N. J. This crane was designed by Wm S. Halsey, C.E., of New York City, is operated by steam and has all the motions by power and is especially constructed for steel casting work.

The new open-hearth furnace has a capacity of nearly 10 tons, and by widening the melting chamber at any time, for which provision has been made, the output can be increased to 12 tons, all valves, regenerators, ports, &c., being built of 12 tons capacity. Some of the improvements are believed to be novel and were designed especially for casting work. The regenerators are at the ends of the furnace proper and entirely independent; the furnace resting on heavy trusses held by heavy masonry. There is a large open space below the bed and of same length as the bed itself. The ports at the ends are also separate structures and bound independently also. The furnace proper is also a separate structure, thus allowing repairs on any part without cooling off any other part of the combined structure. The space between the ports and the main furnace is cooled by ventilation from the open space below. The checkers are 9-inch brick, put in to secure the best draft and largest possible number. The ports are designed especially for making the hottest possible metal. They are protected from the direct cutting action of the flames. The gas and air are mixed back of the melting chamber, thus securing a perfectly even, solid flame, alike all over the bed of the furnace. The ladles are heated in front of the furnace by a special gas flue carried through the open space below the bed, and the ladle heating arrangements are complete and convenient. The gas is furnished by two Herrick round producers of latest form, very simple and effective, and there are certain novel features in arrangement of steam, downcomers, flues, &c., by which the large amount of soot usually deposited is nearly avoided, and the smaller deposit quickly and easily removed.

The plant was given a full and severe test on the 27th ult. One hundred Waster Car Builder knuckles, in 50 flasks, were prepared, and a regular soft heat of steel was melted and duly poured. There was not the least friction from any source—20 minutes being occupied in pouring the 50 flasks—the last metal flowing as freely as the first. The castings were all solid and perfect in every particular, and the plant was pronounced a full success by the large number who witnessed the proceedings. The plant was designed and built by J. A. Herrick, M.E., of Kemble Building, New York City. Mr. Herrick has also recently started a second large gas heating furnace for the Kilmer Mfg. Company of Newburg, N. Y., for their new wire mills. The first furnace is 20 x 7½ feet on the bed, and was started some weeks ago, and the second one was promptly ordered. This furnace is 16 x 7 feet on the bed, contains all recent improvements, and is very simple in construction and cheaply built. Three round Herrick producers furnish the gas, and one stack serves for the two furnaces. Mr. Herrick is also introducing a new gas water valve and a new form of air valve, both of cheap and simple construction, in connection with his new furnaces.

The following sales of freight elevators have been made by the Salem Foundry and Machine Shop of Salem, Mass., builders of hand and power freight elevators: City Mfg. Company, New Bedford, Mass.; Mount Washington Glass Company, New Bedford, Mass.; Royal Fertilizer Company, Charleston, S. C.; Greenwood Company, Greenwood, S. C.; Hendricks Mfg. Company, Carbondale, Pa.; Dexter Yarn Company, Pawtucket, R. I.; Grand Haven Furniture Company, Grand Haven, Mich.; Farr Alpaca Company, Holyoke, Mass.; Greenville Mfg. Company, Greenville, Me. They report business better than for several months.

The Missouri Iron Roofing and Corrugating Company of St. Louis announce that the fire which quite seriously damaged their building will not cause a delay of more than two or three days, and that all orders will go out promptly.

M. P. Satterthwaite has opened an office at 173 Superior street, Cleveland, Ohio, where he will represent manufacturers of iron-working tools and machinery.

Treasury Decisions.

SCRAP STEEL—BOILER-PLATE SHEARINGS.

Before the United States General Appraisers at New York, June 2, 1891. In the matter of the protests, 5571*b*, and 5572*b*, and 8384*a*, 8385*a*, of George B. Douglass and J. Abbott & Co., against the decision of the Collectors of Customs at New York and Boston as to the rate and amount of duties chargeable on certain scrap steel and boiler-plate shearings, imported per Sarmatian, Siberian, Georgia and Indiana. Opinion by Lunt, general appraiser.

The merchandise covered by this protest is known as steel boiler-plate shearings. Steel boiler or ship plate, as it comes from the rolling mill, presents a material of the requisite thickness for a plate, but the plate steel as rolled has edges more or less irregular, and may contain flaws and imperfections in certain parts which unfit such parts from being incorporated in a plate to be cut therefrom. Upon the perfect portion of the rough plate the size of the required plate to be sheared therefrom is marked. If there are no flaws except near the edges plates of large size may be obtained from the rough plate, but, as is manifest, it may happen that imperfections exist so located that the whole rough plate is worthless, except to be remelted, piled or rolled. It is for the interests of the manufacturers to obtain from the rough plate the largest perfect plate which can be sheared therefrom, and in some establishments simply the uneven edges of the sides and ends are first sheared off and the edges of the plate examined for imperfections or flaws. If any are found, to avoid such imperfection a strip is sheared off. It sometimes happens that the whole rough plate is sheared in pieces because no plate of a useful size can be obtained.

These boiler and ship plate shearings may be briefly described as the trimmings of steel plates, varying in thickness, length, width and tensile strength, according to the orders or requirements of manufacturers of boilers and builders of ships. They cannot be practically used for any purpose except remelting, piling or rerolling, and are used only to a limited extent to be remelted and rolled for the production of boiler or ship plates, because a better quality of plate for that purpose is obtained from a homogeneous metal which has not been subjected to such manufacture. Some of the larger pieces of the shearings above referred to, when they drop from the plates, may have an irregular edge on one side, and this edge is sheared straight if it is designed for remanufacture otherwise than by melting. These shearings, because of their irregular shape and sizes, are, in this condition, unfit for any practical use. They are boiler and ship plate makers' waste.

We find as facts that the protestants imported into the port of New York, October 10, 1890, per steamship Georgia, a quantity of steel boiler-plate shearings, upon which duty was levied by the Collector at the rate of five-tenths of 1 cent per pound as for boiler or other plate steel, not thinner than No. 10 wire gauge, sheared or unsheared, valued at 1 cent per pound or less, under the provisions of paragraph 138, N. T., and that the protestants paid the same under protest to obtain their merchandise; that the merchandise consists of steel plate shearings produced in the manufacture of boiler and ship plates and is the waste product of such manufacture and valued at 1 cent per pound or less; that it is waste or refuse steel fit only to be remanufactured and has no commercial value for any other purpose.

The protestants claim that their said merchandise was only subject to duty at three-tenths of 1 cent per pound as scrap steel, under the provisions of paragraph 134, N. T. Upon our finding of fact we hold that steel boiler and ship plate shearings, such as are above described, are scrap steel, subject to duty under paragraph 134, N. T., and the protest is sustained. The entry will be reliquidated accordingly.

SHANK STEEL.

Before the United States General Appraisers at New York, June 5, 1891. In the matter of the protests, 5575-9*b*, 5747*b*, and 5757-8*b*, of F. A. Houdlette & Co., against the decision of the Collector of Customs at Boston as to the rate and amount of duties chargeable on certain shank steel, imported per vessels named and at the dates set forth in the accompanying schedule. Opinion by Lunt, General Appraiser.

The protestants imported into the port of Boston, at the dates and in the vessels set forth in the accompanying schedule, certain bundles of shank steel, upon which the Collector levied duty as reported at 1.2 cents per pound, under paragraph 146, N. T., as for steel in all forms and shapes not specifically provided for in the act, valued at 3 cents per pound, and also an additional duty of one-fourth of 1 cent per pound, as for steel in bars or rods of whatever shape or section, cold rolled, under paragraph 152.

It is admitted and we find that the steel the subject of this importation is from 3 to 4 inches wide, thinner than No. 20 wire gauge, cold rolled, imported in lengths of from 50 to 60 feet, and is valued at 3 cents per pound or less.

The protestants claim that the merchandise is subject to duty only at 1.2 cents per pound, under paragraph 146, N. T.; that the levying of an additional duty of one-fourth of 1 cent per pound duty thereon, under paragraph 152, was erroneous, because it is not covered by the language of the paragraph.

We have examined several witnesses concerning the proper commercial designation of this steel, but in view of our findings of fact it seems to us sufficient that it is specifically described and specially provided for in paragraph 140, N. T., as "other steel," valued at 3 cents per pound or less, 8 inches or less in width, thinner than No. 20 wire gauge, subject to duty at 1.3 cents per pound.

If the steel had been valued above 3 and not above 4 cents per pound it would not have been provided for under paragraph 140, but would have been subject to duty under paragraph 146 as not specially provided for.

It appears to us, therefore, that the protestants have failed to specify the proper paragraph under which their merchandise should be classed, and have also erred by claiming that the same was subject to a less rate of duty than that provided by law. The protest must therefore be overruled.

COLD-ROLLED STEEL STRIPS.

Before the United States General Appraisers at New York, June 6, 1891. In the matter of the protests, 5140*b* and 6132*b*, of Wetherell Brothers against the decision of the Collector of Customs at Boston as to the rate and amount of duties chargeable on certain cold-rolled cast steel, imported per Michigan, December 8, 1890, and Kansas, February 3, 1891. Opinion by Lunt, General Appraiser.

In the matter of this protest we find as facts:

1. That the protestants imported into the port of Boston, per steamer Michigan, December 8, 1890, certain common cold-rolled steel in the form of strips, 150 feet or more in length, 3 inches wide, and of the thickness of 26 wire gauge, valued above 4 and not above 7 cents per pound.

2. That the surface finish of said strips was not better than the surface finish of cold-rolled steel, smooth only, and that said steel was not in the shape or section of bars or rods.

3. The Collector levied a duty thereon of 2 cents per pound, under paragraph 146, N. T., as for steel in all forms or shapes not specially provided for in the act, valued as above stated, and also one-fourth of 1 cent per pound in addition, as for iron or steel bars or rods, cold rolled, under the provisions of paragraph 152.

The protestants contend that said merchandise is subject to duty only at 2 cents per pound under paragraph 146. We hold that strips of steel such as we find this importation to be are not specially provided for in the act, and are therefore made subject to duty under paragraph 146, N. T., at 2 cents per pound, and that paragraph 152 does not provide for an additional duty thereon. The protest is sustained.

The Stetson Failure.

The firm of George W. Stetson & Co., pig iron commission merchants, at 69 Wall street, and at Boston, have failed, and the general partners, William W. Van Voorhis and Herman P. Schuyler, made a general assignment without preference to Theron G. Strong. George W. Stetson is a special partner for $10,000 to December 31, 1892. The assignment was precipitated by an attachment obtained by Pickands, Mather & Co. of Cleveland, for $8599 on the ground of alleged disposition of property.

George W. Stetson & Co. sold pig iron for Pickands, Mather & Co. to various firms and it was alleged that they had not turned over the proceeds. The sales were to eight different concerns, the amounts ranging from $200 to $3050. It was also alleged that $60,000 had been advanced and paid to a person not a member of the firm, which had not been entered on the regular books of account, but only in private memorandum books, and that the regular books showed cash on hand over $53,000, whereas in fact it was less than $3000.

The attachment was issued against William W. Van Voorhis, Barton W. Van Voorhis and George W. Stetson, who composed the late firm of George W. Stetson, which was dissolved on May 21 last by the retirement of Barton W. Van Voorhis, who was succeeded by Herman P. Schuyler.

The business was established in August, 1882, by George W. Stetson, William W. Van Voorhis and Edmund C. Stanton. The latter retired in December, 1882. Mr. Stetson retired as a general partner in December, 1886, and became a special partner for $10,000. Barton W. Van Voorhis became a partner in December, 1887, and withdrew on May 21 last on account of illness, Mr. Schuyler taking his place. W. W. Van Voorhis three weeks ago claimed to have $54,000 in the business and that his brother's capital of $20,000 was also left in at the risk of business, making a total capital of $84,000 with the special.

Theron Strong, the assignee, when called upon by a representative of *The Iron Age* declined to make any statement whatever. None of the partners in the concern could be found.

Edmund D. Smith & Co. of Philadelphia in a circular just issued state that Stetson & Co. merely acted as their correspondents in the New York and New England markets for furnaces which they represent. They add that the failure does not affect them, and that they believe that the furnace company accounts which they represented obtained through Edmund D. Smith & Co. will not be affected adversely.

More than 20,000,000 pounds of tin plate were imported at Philadelphia during the month just closed. The imports of tin at New York last week were manifested for $1,067,888.

MANUFACTURING.

Iron and Steel.

In the United States Circuit Court, at Pittsburgh, last week, the Columbia Iron and Steel Company of Uniontown, Pa., through E. M. Butz, vice-president and treasurer, filed a petition asking the court to grant a rule for the creditors and receiver to show cause why the decree appointing a receiver should not be vacated. The Columbia Iron and Steel Company allege in their petition that since Col. J. M. Schoonmaker was appointed receiver an extension of agreement has been arrived at with the creditors for the payment of all indebtedness in five annual installments from July 1, 1891, with interest, payable annually, and the right of said creditors of selecting a Committee of Supervision over the affairs of the company. Therefore the company desire that the receiver be discharged. It will be remembered that the Columbia Iron and Steel Company of Pittsburgh, whose plant is located at Uniontown, made an assignment about three months ago, since which time their plant has been idle. In our issue of last week we stated that Carnegie, Phipps & Co., Limited, of Pittsburgh were considering the advisability of operating this plant, but since the above steps have been taken the project has been abandoned. In all probability the plant will commence operation some time during the present month.

F. A. Marriott, Richard Wooley, Jr., and E. J. Adams are the proprietors of the newly formed Ivanhoe Rolling Mill and Iron Company, whose works are to be located at Ivanhoe, Ind., on the Michigan Central Railroad. The plant of the Western Iron Company in Kansas, near Kansas City, is to be removed to Ivanhoe.

A charter was granted last week to the Spang Steel and Iron Company of Etna, Allegheny County, Pa., with a capital stock of $1,000,000. The following are the directors of the new concern: John W. Chalfant, Campbell B. Herron, C. H. Spang, Geo. H. Chalfant and W. C. Steele. The new concern succeed the old firm of Spang Steel and Iron Company, Limited, who have operated a steel plant at Etna, Pa., for a number of years, the change in the style of the firm being made for the purpose of changing from a limited company to an incorporation.

The Cambria Iron Company of Johnstown, Pa., have recently put in a Babcock & Wilcox boiler at their No. 6 blast furnace. It is equipped with the Murphy Mechanical Stoker.

As stated in a recent issue, the Brilliant Iron and Steel Company, at Brilliant, Jefferson County, Ohio, have decided to abandon the nail factory part of their plant. The firm will build in its place an 18-inch bar mill with four stands of rolls; a 12-inch guide mill with five stands of rolls, one 8-inch guide train with five stands of rolls. The firm expect to have these mills in operation the latter part of the present year. The contract for machinery for the different mills has already been placed with the Lewis Foundry and Machine Company, Limited, of Pittsburgh, Pa.

Considerable progress has been made during the last few weeks in the erection of the new rolling mill by the Shenandoah Iron Company, at Shenandoah, Va., and the plant of the above firm will probably be in operation within the next 90 days turning out all kinds of finished iron in its various forms. The mill is equipped with an 18-inch three-high mill; also a 10-inch guide mill, two large shears and one improved hot saw, all made by the Lloyd Booth Company, proprietors of the Falcon Foundry and Machine Works, at Youngstown, Ohio, and erected by James McFadden, who is in the employ of that firm.

Last week the Lloyd Booth Company received an order from the Cleveland Hardware Company, Cleveland, Ohio, for a 10-inch guide train and one large scrap shear.

O. P. Mason, Bellaire, Ohio, inventor and proprietor of the Mason Ingot Manipulator, is now negotiating with several iron and steel firms with fair prospects of furnishing manipulators for use in their various plants.

In the Orphans' Court at Pittsburgh last week, a decree was made granting the petition of the executors of the late John H. Shoenberger for leave to sell at public sale his interest in the firms of Shoenberger & Co. and Shoenberger, Speer & Co., proprietors of the Juniata Iron and Steel Works in that city. Mr. Shoenberger's interest in the firm of Shoenberger & Co. was five thirty-seconds, the capital stock being $320,000. In the firm of Shoenberger, Speer & Co., the capital stock of which is $200,000, he also owns a five thirty-seconds interest. Into the first-named firm he had paid in $50,000, and in the last $31,250; the partnership is to continue until June 30, 1898. Under the articles of the association in case a member dies or withdraws the remaining members of the company have the option to purchase his interest. The appraisers were appointed to appraise the interest of the late Mr. Shoenberger in both concerns. In the firm of Shoenberger & Co. his interest was valued at $132,776.20, and in the firm of Shoenberger, Speer & Co. at $75,303.03. The surviving members of the companies declined to purchase his interest at this valuation, and in consequence the executors asked permission to sell at public sale. The executors are A. Long, J. M. Bronson, A. J. Antelo and the Pensylvania Company for the Insurance of Lives. The members of Shoenberger & Co. and Shoenberger, Speer & Co. and their interests are: Chas. L. Fitzhugh, John Z. Speer, George K. Shoenberger and John A. Shoenberger, each owning five thirty-seconds in each firm; Peter Shoenberger, eight thirty-seconds in each firm, and G. A. Steiner, four thirty-seconds in each firm. The articles of association show that both companies were indebted to John H. and George K. Shoenberger for money loaned; also that a rental of $20,000 a year was paid to John H. and George K. Shoenberger for the works of Shoenberger, Speer & Co. on Sixteenth street, Pittsburgh, and a rental of $6944.30 a year to the same persons for the ground between Fourteenth and Sixteenth streets in that city on which the plant of the Junaita Iron and Steel Works is located.

The finishing department of the Alabama Rolling Mills at Gate City, near Birmingham, was burned 25th ult. The loss is estimated at $20,000.

John Walter and Frank Mitchell owned a half interest in the Mitchell & Tranter Rolling Mill in Covington, Ky., and they have disposed of their interest to Chas. J. Tranter of Covington.

The old Ferry Rolling Mill of the Diamond State Iron Company, in Wilmington, Del., was destroyed by fire on Sunday. The loss is estimated at $500,000.

The Midvale Steel Company of Nicetown, Philadelphia, Pa., are now in the market with three brands of steel tires—namely, the open-hearth, the crucible and a special brand only lately introduced. The Midvale Company have lately erected a new crucible plant, and are now making a line of crucible steel tires. Through the introduction of an ordnance plant for Government work, the Midvale Company have been enabled to introduce the third or special brand of tires, made of the same material and after the same methods used for ordnance forgings for the United States. The company are now prepared to make steel forgings and castings of the heaviest description.

Mt. Lauret Furnace of the Clymer Iron Company, Clymer, Pa., has resumed operations.

At the annual meeting of the Bethlehem Iron Company, held at Bethlehem, Pa., on the 23d ult., the following Board of Directors were chosen for the ensuing year: Robert H. Sayre, Joseph Wharton, E. P. Wilbur, Robert P. Linderman, George H. Myers, John Fritz and Beauveau Borie. The board subsequently re-elected R. P. Linderman president, R. H. Sayre, general manager and vice-president, C. O. Brunner treasurer, A. S. Schropp secretary, John Fritz chief engineer and R. W. Davenport assistant superintendent.

The proposition of Dr. Charles J Eames of Pittsburgh to build an iron and steel plant on San Diego Bay, near San Diego, Cal., of 100 tons daily capacity, for a subsidy of $200,000 in cash and land, has been accepted by the Chamber of Commerce of that city, and a committee appointed to perfect the plans.

The London Coal and Iron Company, capitalized at $150,000, have filed articles of incorporation in New Jersey. Operations will be carried on at Ducktown, Tenn., and Middlesborough, Ky.

The Lone Star Furnace, at Jefferson, Texas, has resumed operations.

T. G. Bush has been elected president of the Woodstock Iron Company, Anniston, Ala. It is announced that one of the coke furnaces will be started up shortly.

Machinery.

Mackintosh, Hemphill & Co., founders, machinists and engine builders, of Pittsburgh, have received a contract for the erection of the 35-inch beam mill to be built by Carnegie, Phipps & Co., Limited, at Homestead, Pa. The ten housings which will be used will weigh complete 25 tons each, and the whole order will weigh about 600 tons. The first named firm have just shipped a 36 x 48 inch engine to the Pittsburgh Wire Company, which concern is building a wire mill at Braddock, Pa. They have also ready for shipment three blowing engines, 42 x 84 x 60 inches, to Radford, Va., and two of the same size to Embreville, Tenn. During the present week they shipped a plate mill to the West Superior Iron and Steel Company, at West Superior, Wis.

The well-known firm of Fairbanks, Morse & Co., manufacturers of scales and machinery at Chicago, have been incorporated under the same name with a capital stock of $1,000,000. The incorporators are Charles H. Morse, C. A. Sharpe and W. E. Miller.

The Kingsley Foundry Company, of Lorraine, Ohio, have commenced building operations upon their 20-acre purchase at Hammond, Ind. Five structures will be put up at a cost of $100,000, work on the foundations of the main building, to be 200 x 85 feet, being now in progress. Besides this building there will be a boiler, engine, pattern-making room, and office buildings. All the buildings will be of brick.

The G. A. Gray Company, Cincinnati, lathe manufacturers, have purchased the Thoms property, on the northwest corner of Harrison avenue and Brighton street, being about 150 by 300. The consideration was $36,000. They will erect a large brick building on the lot, to cost not less than $25,000.

Morgan's Iron Works, in New London, Conn., were burned on the 25th ult. Loss, $75,000.

James Lappan & Co., boiler manufacturers, of Pittsburgh, are erecting a large tempering tank for tempering the armor plates to be made in the new armor-plate mill of Carnegie, Phipps & Co., Limited, at Homestead, Pa. The same firm are also erecting a chimney and gas flue for H and I furnaces at the Edgar Thomson Works of Carnegie Bros. & Co., Limited, at Braddock, Pa. Other work under construction and contract by this firm includes an open-hearth steel furnace and stacks for the Latrobe Steel Works, at Latrobe, Pa., eight oil tanks for the Waverly Oil Works, Pittsburgh, and a battery of boilers and 20 puddling furnace stacks for the recently organized Monongahela Iron and Steel Company, who are now erecting a muck and puddle mill at Hays Station, on the Pittsburgh, Virginia and Charleston Railroad, about 10 miles from Pittsburgh.

The M. Steele Company, successors to the Blakeney Foundry Company, iron founders and machinists, of Springfield, Ohio, are at present engaged on two large contracts for cable yokes and plates. One is for the Broadway cable road in New York City and the other for the West Side road in Chicago. The output aggregates about 60 tons per day, and the firm are compelled to operate their plant night and day. This large addition to their regular lines of work has necessitated the leasing of the foundry of W. N. Whitely & Co. of Springfield, Ohio, for an indefinite period. The total force employed by the firm is 250. Their cupola department is taxed to its utmost to complete time orders. Among recent orders they have received is one for the Superior Stove Company and the Union Steel Works, both of Superion, Wis. They are also filling orders for the Salem Mineral Fibre Company, Salem, Va., and Wagner Mfg. Company, Sidney, Ohio, and the Fuller-Lee Mfg. Company, Winfield, Kas.

A receiver has been appointed for Fletcher, Ride & Co., founders, at Atlanta, Ga.

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In our issue of last week we made mention of the fact that the members of the Mahoning and Shenango Valley Pig Iron Manufacturers' Association were taking steps looking to the organization of a company for the purchase of coal lands with a view of manufacturing the coke used in their blast furnaces. From the manager of a blast furnace plant located in the Mahoning Valley we have received a letter on this subject which reads as follows: "There has been a good deal of talk recently about the manufacturers of pig iron in the Mahoning and Shenango valleys arranging to make their own coke and to my mind this result seems to be inevitable, I don't, however, think it will materialize in the near future. Some properties have been examined and considerable correspondence had with the owners of coke property, and as a final result the whole matter has been turned over to the Mahoning and Shenango Valley Iron Manufacturers' Association, and will be taken in hand by that body."

Changes in Western Scale.

By Telegraph.

After a number of conferences held between committees of the Amalgamated Association of Iron and Steel Workers and the iron manufacturers of Pittsburgh, the new scale for the year commencing July 1, 1891, and ending June 30, 1892, has been accepted by the manufacturers. The following changes have been made in memorandum of agreement: Clause 3 has been changed to read as follows: "The time in scrapping and busheling, also finishing and all other departments, shall in no case exceed nine hours and 15 minutes from the time the mill begins to roll until the first furnace commences to charge the last heat. This shall not apply to mills working shorter charging hours, nor to boiling departments, scrapping and busheling, and other departments working under the three-turn system. The time for meals on following-up mills shall not be counted in." The last part of Clause 2, in boiling, has been changed to read "by the word majority is meant a majority of the furnaces working. Hard iron or inferior coal which increases the working time beyond that specified above, shall be considered a grievance." In paragraph 10, in boiling, sentence reading "when working muck bar, crop ends, $3.57 per ton shall be paid," has been stricken out. In paragraph 11, the word "alone" is inserted before "on hot cinder fix bar and nail plate mills." Paragraph 7, insert words "and over" after "piles of 150 pounds." In plate and tank mills, clause 10, reading "all sheet bars cut from crop ends and defective plate iron or steel to be paid for at top and bottom prices," has been stricken out. In journeymen roll turners' scale paragraph 1 has been changed to read "the wages of journeymen roll turners shall be $3 per day of ten hours' work at a 2-cent card, instead of nine hours." Paragraph 2 has been changed to read "three hours and 20 minutes to constitute a half day after the regular time." In nail cutting scale footnote 1 has been changed to read "for making tools the company shall furnish the best steel" the word "Mushet" being striken out in addenda. Paragraph 2 has been changed to read as follows: "Roughing down on bar, structural and 12-inch mills shall be paid not less than 30 per cent. of rollers' wages, to be deducted from rollers' wages." Paragraph 3 changed as follows: "Roughing up on bar, structural and 12-inch mills shall not be less than 40 per cent. of the price paid for catching on such mills, to be deducted from catchers' wages." Paragraph 4 changed, "boilers' helpers to receive not less than one-third, and 5 per cent. of boiler wages, to be paid by the boiler."

A number of firms have already signed and others are signing as rapidly as possible. Brown & Co., Limited; Howe, Brown & Co., Limited; Carnegie, Phipps & Co., Limited, Upper Union Mills; Moorhead-McCleane Company, all of Pittsburgh; Birmingham, Ala., Rolling Mill Company, Birmingham Ala.; P. L. Kimberly & Co., Sharon and Greenville, in addition to some other firms, signed yesterday. The Amalgamated scale was presented to Carnegie Bros. & Co., Limited, proprietors of the Allegeheny Bessemer Steel Company, at Duquesne, Pa., yesterday. The firm refused to sign the scale and it is reported the committee that presented it was discharged. The officials of the Amalgamated Association state that the scale will be signed at this works, and if the firm persist in their refusal to sign it a strike will take place.

MANUFACTURING.

Iron and Steel.

In the United States Circuit Court, at Pittsburgh, last week, the Columbia Iron and Steel Company of Uniontown, Pa., through E. M. Butz, vice-president and treasurer, filed a petition asking the court to grant a rule for the creditors and receiver to show cause why the decree appointing a receiver should not be vacated. The Columbia Iron and Steel Company allege in their petition that since Col. J. M. Schoonmaker was appointed receiver an extension of agreement has been arrived at with the creditors for the payment of all indebtedness in five annual installments from July 1, 1891, with interest, payable annually, and the right of said creditors of selecting a Committee of Supervision over the affairs of the company. Therefore the company desire that the receiver be discharged. It will be remembered that the Columbia Iron and Steel Company of Pittsburgh, whose plant is located at Uniontown, made an assignment about three months ago, since which time their plant has been idle. In our issue of last week we stated that Carnegie, Phipps & Co., Limited, of Pittsburgh were considering the advisability of operating this plant, but since the above steps have been taken the project has been abandoned. In all probability the plant will commence operation some time during the present month.

F. A. Marriott, Richard Wooley, Jr., and E. J. Adams are the proprietors of the newly formed Ivanhoe Rolling Mill and Iron Company, whose works are to be located at Ivanhoe, Ind., on the Michigan Central Railroad. The plant of the Western Iron Company in Kansas, near Kansas City, is to be removed to Ivanhoe.

A charter was granted last week to the Spang Steel and Iron Company of Etna, Allegheny County, Pa., with a capital stock of $1,000,000. The following are the directors of the new concern: John W. Chalfant, Campbell B. Herron, C. H. Spang, Geo. H. Chalfant and W. C. Steele. The new concern succeed the old firm of Spang Steel and Iron Company, Limited, who have operated a steel plant at Etna, Pa., for a number of years, the change in the style of the firm being made for the purpose of changing from a limited company to an incorporation.

The Cambria Iron Company of Johnstown, Pa., have recently put in a Babcock & Wilcox boiler at their No. 6 blast furnace. It is equipped with the Murphy Mechanical Stoker.

As stated in a recent issue, the Brilliant Iron and Steel Company, at Brilliant, Jefferson County, Ohio, have decided to abandon the nail factory part of their plant. The firm will build in its place an 18-inch bar mill with four stands of rolls; a 12-inch guide mill with five stands of rolls, one 8-inch guide train with five stands of rolls. The firm expect to have these mills in operation the latter part of the present year. The contract for machinery for the different mills has already been placed with the Lewis Foundry and Machine Company, Limited, of Pittsburgh, Pa.

Considerable progress has been made during the last few weeks in the erection of the new rolling mill by the Shenandoah Iron Company, at Shenandoah, Va., and the plant of the above firm will probably be in operation within the next 90 days turning out all kinds of finished iron in its various forms. The mill is equipped with an 18-inch three-high mill; also a 10 inch guide mill, two large shears and one improved hot saw, all made by the Lloyd Booth Company, proprietors of the Falcon Foundry and Machine Works, at Youngstown, Ohio, and erected by James McFadden, who is in the employ of that firm.

Last week the Lloyd Booth Company received an order from the Cleveland Hardware Company, Cleveland, Ohio, for a 10-inch guide train and one large scrap shear.

O. P. Mason, Bellaire, Ohio, inventor and proprietor of the Mason Ingot Manipulator, is now negotiating with several iron and steel firms with fair prospects of furnishing manipulators for use in their various plants.

In the Orphans' Court at Pittsburgh last week, a decree was made granting the petition of the executors of the late John H. Shoenberger for leave to sell at public sale his interest in the firms of Shoenberger & Co. and Shoenberger, Speer & Co., proprietors of the Juniata Iron and Steel Works in that city. Mr. Shoenberger's interest in the firm of Shoenberger & Co. was five thirty-seconds, the capital stock being $320,000. In the firm of Shoenberger, Speer & Co., the capital stock of which is $200,000, he also owns a five thirty-seconds interest. Into the first-named firm he had paid in $50,000, and in the last $31,250; the partnership is to continue until June 30, 1898. Under the articles of the association in case a member dies or withdraws the remaining members of the company have the option to purchase his interest. The appraisers were appointed to appraise the interest of the late Mr. Shoenberger in both concerns. In the firm of Shoenberger & Co. his interest was valued at $132,776.20, and in the firm of Shoenberger, Speer & Co. at $75,303.03. The surviving members of the companies declined to purchase his interest at this valuation, and in consequence the executors asked permission to sell at public sale. The executors are A. Long, J. M. Bronson, A. J. Antelo and the Pensylvania Company for the Insurance of Lives. The members of Shoenberger & Co. and Shoenberger, Speer & Co. and their interests are: Chas. L. Fitzhugh, John Z. Speer, George K. Shoenberger and John A. Shoenberger, each owning five thirty-seconds in each firm; Peter Shoenberger, eight thirty-seconds in each firm, and G. A. Steiner, four thirty-seconds in each firm. The articles of association show that both companies were indebted to John H. and George K. Shoenberger for money loaned; also that a rental of $20,000 a year was paid to John H. and George K. Shoenberger for the works of Shoenberger, Speer & Co. on Sixteenth street, Pittsburgh, and a rental of $6944.20 a year to the same persons for the ground between Fourteenth and Sixteenth streets in that city on which the plant of the Junaita Iron and Steel Works is located.

The finishing department of the Alabama Rolling Mills at Gate City, near Birmingham, was burned 25th ult. The loss is estimated at $20,000.

John Walter and Frank Mitchell owned a half interest in the Mitchell & Tranter Rolling Mill in Covington, Ky., and they have disposed of their interest to Chas. J. Tranter of Covington.

The old Ferry Rolling Mill of the Diamond State Iron Company, in Wilmington, Del., was destroyed by fire on Sunday. The loss is estimated at $500,000.

The Midvale Steel Company of Nicetown, Philadelphia, Pa., are now in the market with three brands of steel tires—namely, the open-hearth, the crucible and a special brand only lately introduced. The Midvale Company have lately erected a new crucible plant, and are now making a line of crucible steel tires. Through the introduction of an ordnance plant for Government work, the Midvale Company have been enabled to introduce the third or special brand of tires, made of the same material and after the same methods used for ordnance forgings for the United States. The company are now prepared to make steel forgings and castings of the heaviest description.

Mt. Lauret Furnace of the Clymer Iron Company, Clymer, Pa., has resumed operations.

At the annual meeting of the Bethlehem Iron Company, held at Bethlehem, Pa., on the 23d ult., the following Board of Directors were chosen for the ensuing year: Robert H. Sayre, Joseph Wharton, E. P. Wilbur, Robert P. Linderman, George H. Myers, John Fritz and Beauveau Borie. The board subsequently re-elected R. P. Linderman president, R. H. Sayre, general manager and vice-president, C. O. Brunner treasurer, A. S. Schropp secretary, John Fritz chief engineer and R. W. Davenport assistant superintendent.

The proposition of Dr. Charles J Eames of Pittsburgh to build an iron and steel plant on San Diego Bay, near San Diego, Cal., of 100 tons daily capacity, for a subsidy of $200,000 in cash and land, has been accepted by the Chamber of Commerce of that city, and a committee appointed to perfect the plans.

The London Coal and Iron Company, capitalized at $150,000, have filed articles of incorporation in New Jersey. Operations will be carried on at Ducktown, Tenn., and Middlesborough, Ky.

The Lone Star Furnace, at Jefferson, Texas, has resumed operations.

T. G. Bush has been elected president of the Woodstock Iron Company, Anniston, Ala. It is announced that one of the coke furnaces will be started up shortly.

Machinery.

Mackintosh, Hemphill & Co., founders, machinists and engine builders, of Pittsburgh, have received a contract for the erection of the 35-inch beam mill to be built by Carnegie, Phipps & Co., Limited, at Homestead, Pa. The ten housings which will be used will weigh complete 25 tons each, and the whole order will weigh about 600 tons. The first named firm have just shipped a 36 x 48 inch engine to the Pittsburgh Wire Company, which concern is building a wire mill at Braddock, Pa. They have also ready for shipment three blowing engines, 42 x 84 x 60 inches, to Radford, Va., and two of the same size to Embreville, Tenn. During the present week they shipped a plate mill to the West Superior Iron and Steel Company, at West Superior, Wis.

The well-known firm of Fairbanks, Morse & Co., manufacturers of scales and machinery at Chicago, have been incorporated under the same name with a capital stock of $1,000,000. The incorporators are Charles H. Morse, C. A. Sharpe and W. E. Miller.

The Kingsley Foundry Company, of Lorraine, Ohio, have commenced building operations upon their 20-acre purchase at Hammond, Ind. Five structures will be put up at a cost of $100,000, work on the foundations of the main building, to be 200 x 85 feet, being now in progress. Besides this building there will be a boiler, engine, pattern-making room, and office buildings. All the buildings will be of brick.

The G. A. Gray Company, Cincinnati, lathe manufacturers, have purchased the Thoms property, on the northwest corner of Harrison avenue and Brighton street, being about 150 by 300. The consideration was $36,000. They will erect a large brick building on the lot, to cost not less than $25,000.

Morgan's Iron Works, in New London, Conn., were burned on the 25th ult. Loss, $75,000.

James Lappan & Co., boiler manufacturers, of Pittsburgh, are erecting a large tempering tank for tempering the armor plates to be made in the new armor-plate mill of Carnegie, Phipps & Co., Limited, at Homestead, Pa. The same firm are also erecting a chimney and gas flue for H and I furnaces at the Edgar Thomson Works of Carnegie Bros. & Co., Limited, at Braddock, Pa. Other work under construction and contract by this firm includes an open-hearth steel furnace and stacks for the Latrobe Steel Works, at Latrobe, Pa., eight oil tanks for the Waverly Oil Works, Pittsburgh, and a battery of boilers and 20 puddling furnace stacks for the recently organized Monongahela Iron and Steel Company, who are now erecting a muck and puddle mill at Hays Station, on the Pittsburgh, Virginia and Charleston Railroad, about 10 miles from Pittsburgh.

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MANUFACTURING.

Iron and Steel.

In the United States Circuit Court, at Pittsburgh, last week, the Columbia Iron and Steel Company of Uniontown, Pa., through E. M. Butz, vice-president and treasurer, filed a petition asking the court to grant a rule for the creditors and receiver to show cause why the decree appointing a receiver should not be vacated. The Columbia Iron and Steel Company allege in their petition that since Col. J. M. Schoonmaker was appointed receiver an extension of agreement has been arrived at with the creditors for the payment of all indebtedness in five annual installments from July 1, 1891, with interest, payable annually, and the right of said creditors of selecting a Committee of Supervision over the affairs of the company. Therefore the company desire that the receiver be discharged. It will be remembered that the Columbia Iron and Steel Company of Pittsburgh, whose plant is located at Uniontown, made an assignment about three months ago, since which time their plant has been idle. In our issue of last week we stated that Carnegie, Phipps & Co., Limited, of Pittsburgh were considering the advisability of operating this plant, but since the above steps have been taken the project has been abandoned. In all probability the plant will commence operation some time during the present month.

F. A. Marriott, Richard Wooley, Jr., and E. J. Adams are the proprietors of the newly formed Ivanhoe Rolling Mill and Iron Company, whose works are to be located at Ivanhoe, Ind., on the Michigan Central Railroad. The plant of the Western Iron Company in Kansas, near Kansas City, is to be removed to Ivanhoe.

A charter was granted last week to the Spang Steel and Iron Company of Etna, Allegheny County, Pa., with a capital stock of $1,000,000. The following are the directors of the new concern: John W. Chalfant, Campbell B. Herron, C. H. Spang, Geo. H. Chalfant and W. C. Steele. The new concern succeed the old firm of Spang Steel and Iron Company, Limited, who have operated a steel plant at Etna, Pa., for a number of years, the change in the style of the firm being made for the purpose of changing from a limited company to an incorporation.

The Cambria Iron Company of Johnstown, Pa., have recently put in a Babcock & Wilcox boiler at their No. 6 blast furnace. It is equipped with the Murphy Mechanical Stoker.

As stated in a recent issue, the Brilliant Iron and Steel Company, at Brilliant, Jefferson County, Ohio, have decided to abandon the nail factory part of their plant. The firm will build in its place an 18-inch bar mill with four stands of rolls; a 12-inch guide mill with five stands of rolls, one 8-inch guide train with five stands of rolls. The firm expect to have these mills in operation the latter part of the present year. The contract for machinery for the different mills has already been placed with the Lewis Foundry and Machine Company, Limited, of Pittsburgh, Pa.

Considerable progress has been made during the last few weeks in the erection of the new rolling mill by the Shenandoah Iron Company, at Shenandoah, Va., and the plant of the above firm will probably be in operation within the next 90 days turning out all kinds of finished iron in its various forms. The mill is equipped with an 18-inch three-high mill; also a 10-inch guide mill, two large shears and one improved hot saw, all made by the Lloyd Booth Company, proprietors of the Falcon Foundry and Machine Works, at Youngstown, Ohio, and erected by James McFadden, who is in the employ of that firm.

Last week the Lloyd Booth Company received an order from the Cleveland Hardware Company, Cleveland, Ohio, for a 10-inch guide train and one large scrap shear.

O. P. Mason, Bellaire, Ohio, inventor and proprietor of the Mason Ingot Manipulator, is now negotiating with several iron and steel firms with fair prospects of furnishing manipulators for use in their various plants.

In the Orphans' Court at Pittsburgh last week, a decree was made granting the petition of the executors of the late John H. Shoenberger for leave to sell at public sale his interest in the firms of Shoenberger & Co. and Shoenberger, Speer & Co., proprietors of the Juniata Iron and Steel Works in that city. Mr. Shoenberger's interest in the firm of Shoenberger & Co. was five thirty-seconds, the capital stock being $320,000. In the firm of Shoenberger, Speer & Co., the capital stock of which is $200,000, he also owns a five thirty-seconds interest. Into the first-named firm he had paid in $50,000, and in the last $31,250; the partnership is to continue until June 30, 1898. Under the articles of the association in case a member dies or withdraws the remaining members of the company have the option to purchase his interest. The appraisers were appointed to appraise the interest of the late Mr. Shoenberger in both concerns. In the firm of Shoenberger & Co. his interest was valued at $132,776.20, and in the firm of Shoenberger, Speer & Co. at $75,303.03. The surviving members of the companies declined to purchase his interest at this valuation, and in consequence the executors asked permission to sell at public sale. The executors are A. Long, J. M. Bronson, A. J. Antelo and the Pensylvania Company for the Insurance of Lives. The members of Shoenberger & Co. and Shoenberger, Speer & Co. and their interests are: Chas. L. Fitzhugh, John Z. Speer, George K. Shoenberger and John A. Shoenberger, each owning five thirty-seconds in each firm; Peter Shoenberger, eight thirty-seconds in each firm, and G. A. Steiner, four thirty-seconds in each firm. The articles of association show that both companies were indebted to John H. and George K. Shoenberger for money loaned; also that a rental of $20,000 a year was paid to John H. and George K. Shoenberger for the works of Shoenberger, Speer & Co. on Sixteenth street, Pittsburgh, and a rental of $6944.20 a year to the same persons for the ground between Fourteenth and Sixteenth streets in that city on which the plant of the Junaita Iron and Steel Works is located.

The finishing department of the Alabama Rolling Mills at Gate City, near Birmingham, was burned 25th ult. The loss is estimated at $20,000.

John Walter and Frank Mitchell owned a half interest in the Mitchell & Tranter Rolling Mill in Covington, Ky., and they have disposed of their interest to Chas. J. Tranter of Covington.

The old Ferry Rolling Mill of the Diamond State Iron Company, in Wilmington, Del., was destroyed by fire on Sunday. The loss is estimated at $500,000.

The Midvale Steel Company of Nicetown, Philadelphia, Pa., are now in the market with three brands of steel tires—namely, the open-hearth, the crucible and a special brand only lately introduced. The Midvale Company have lately erected a new crucible plant, and are now making a line of crucible steel tires. Through the introduction of an ordnance plant for Government work, the Midvale Company have been enabled to introduce the third or special brand of tires, made of the same material and after the same methods used for ordnance forgings for the United States. The company are now prepared to make steel forgings and castings of the heaviest description.

Mt. Lauret Furnace of the Clymer Iron Company, Clymer, Pa., has resumed operations.

At the annual meeting of the Bethlehem Iron Company, held at Bethlehem, Pa., on the 23d ult., the following Board of Directors were chosen for the ensuing year: Robert H. Sayre, Joseph Wharton, E. P. Wilbur, Robert P. Linderman, George H. Myers, John Fritz and Beauveau Borie. The board subsequently re-elected R. P. Linderman president, R. H. Sayre, general manager and vice-president, C. O. Brunner treasurer, A. S. Schropp secretary, John Fritz chief engineer and R. W. Davenport assistant superintendent.

The proposition of Dr. Charles J Eames of Pittsburgh to build an iron and steel plant on San Diego Bay, near San Diego, Cal., of 100 tons daily capacity, for a subsidy of $200,000 in cash and land, has been accepted by the Chamber of Commerce of that city, and a committee appointed to perfect the plans.

The London Coal and Iron Company, capitalized at $150,000, have filed articles of incorporation in New Jersey. Operations will be carried on at Ducktown, Tenn., and Middlesborough, Ky.

The Lone Star Furnace, at Jefferson, Texas, has resumed operations.

T. G. Bush has been elected president of the Woodstock Iron Company, Anniston, Ala. It is announced that one of the coke furnaces will be started up shortly.

Machinery.

Mackintosh, Hemphill & Co., founders, machinists and engine builders, of Pittsburgh, have received a contract for the erection of the 35-inch beam mill to be built by Carnegie, Phipps & Co., Limited, at Homestead, Pa. The ten housings which will be used will weigh complete 25 tons each, and the whole order will weigh about 600 tons. The first named firm have just shipped a 36 x 48 inch engine to the Pittsburgh Wire Company, which concern is building a wire mill at Braddock, Pa. They have also ready for shipment three blowing engines, 42 x 84 x 60 inches, to Radford, Va., and two of the same size to Embreville, Tenn. During the present week they shipped a plate mill to the West Superior Iron and Steel Company, at West Superior, Wis.

The well-known firm of Fairbanks, Morse & Co., manufacturers of scales and machinery at Chicago, have been incorporated under the same name with a capital stock of $1,000,000. The incorporators are Charles H. Morse, C. A. Sharpe and W. E. Miller.

The Kingsley Foundry Company, of Lorraine, Ohio, have commenced building operations upon their 20-acre purchase at Hammond, Ind. Five structures will be put up at a cost of $100,000, work on the foundations of the main building, to be 200 x 85 feet, being now in progress. Besides this building there will be a boiler, engine, pattern-making room, and office buildings. All the buildings will be of brick.

The G. A. Gray Company, Cincinnati, lathe manufacturers, have purchased the Thoms property, on the northwest corner of Harrison avenue and Brighton street, being about 150 by 300. The consideration was $36,000. They will erect a large brick building on the lot, to cost not less than $25,000.

Morgan's Iron Works, in New London, Conn., were burned on the 25th ult. Loss, $75,000.

James Lappan & Co., boiler manufacturers, of Pittsburgh, are erecting a large tempering tank for tempering the armor plates to be made in the new armor-plate mill of Carnegie, Phipps & Co., Limited, at Homestead, Pa. The same firm are also erecting a chimney and gas flue for H and I furnaces at the Edgar Thomson Works of Carnegie Bros. & Co., Limited, at Braddock, Pa. Other work under construction and contract by this firm includes an open-hearth steel furnace and stacks for the Latrobe Steel Works, at Latrobe, Pa., eight oil tanks for the Waverly Oil Works, Pittsburgh, and a battery of boilers and 20 puddling furnace stacks for the recently organized Monongahela Iron and Steel Company, who are now erecting a muck and puddle mill at Hays Station, on the Pittsburgh, Virginia and Charleston Railroad, about 10 miles from Pittsburgh.

The M. Steele Company, successors to the Blakeney Foundry Company, iron founders and machinists, of Springfield, Ohio, are at present engaged on two large contracts for cable yokes and plates. One is for the Broadway cable road in New York City and the other for the West Side road in Chicago. The output aggregates about 60 tons per day, and the firm are compelled to operate their plant night and day. This large addition to their regular lines of work has necessitated the leasing of the foundry of W. N. Whitely & Co. of Springfield, Ohio, for an indefinite period. The total force employed by the firm is 250. Their cupola department is taxed to its utmost to complete time orders. Among recent orders they have received is one for the Superior Stove Company and the Union Steel Works, both of Superion, Wis. They are also filling orders for the Salem Mineral Fibre Company, Salem, Va., and Wagner Mfg. Company, Sidney, Ohio, and the Fuller-Lee Mfg. Company, Winfield, Kas.

A receiver has been appointed for Fletcher, Ride & Co., founders, at Atlanta, Ga.

The Canadian Pacific Railway Company will erect a machine shop at Henderson, Maine, for repairing the rolling stock of the road. An iron foundry is also contemplated.

The Ohio Wheel and Foundry Company have been incorporated at Toledo, Ohio, where operations will be carried on.

Fire has destroyed the boiler shops of the Morgan Iron Works at New London, Conn., together with valuable patterns. The loss is $30,000.

James Leffel & Co. of Springfield, Ohio, have just issued a catalogue describing their latest styles of turbine water wheels. The book is not confined solely to describing the different kinds of wheels made, but contains much information of value to all those who use water power. They recently supplied and started a wheel of 550 horse-power 30¼ inches diameter, for electric lighting and power purposes. They also furnished two wheels 5¼ feet, each about 350 horse-power, which transmit their power over a 5¼-mile No. 10 wire at a loss of about 30 per cent. To another company they sent five wheels 5¼ feet diameter for electric lighting and power purposes. They are supplying three wheels 4½ feet diameter, with all of the connecting gearing, &c., complete, for the Niles Electric Light and Power Company. They also sold two recently of 20 inches diameter, 250 horse-power each, and three of 23 inches diameter, 300 horse-power

each, and two of 26½ inches diameter, 350 horse-power each. These show that the water wheel as now constructed meets all the exacting requirements of an electric lighting plant.

The new foundry of the Dalton Machine Company at Dalton, Mass., is nearly completed and operations will begin this week.

A joint stock company has been organized at Comanche, Texas, with a capital of $50,000, for a foundry and machine shop, to be erected in the near future.

The Maist & Gorten Machinery Mfg. Company have been incorporated at Warsaw, Ind., with a capital of $25,000.

A stock company has been organized to establish an iron foundry and machine shops at Asheboro, N. C.

Hardware.

After remodeling their oil stone factory and making necessary repairs to machinery, Julius Louis & Co., Jeffersonville, Ind., advise us that they are now running constantly making Ouachita, Arkansas and other sharpening stones for the Hardware trade. These stones are from the firm's quarries in Arkansas and Indiana.

Joseph Ehart & Son, Fort Madison, Iowa, manufacturers of tin fruit cans, are reported to be running their works day and night to enable them to supply the demand for cans.

The Wm. J. Lloyd Mfg. Company, Philadelphia, have enlarged their works and increased their capacity, so that this season they will be able to fill all orders promptly. The Great American meat cutters will be made larger than last year and very much improved. They are at work on, and will have ready by September 1, a power machine which will cut over 2000 pounds of beef per hour. This, they claim, will have a larger cutting capacity than any machine now in the market. They also emphasize the point that the Great American will cut and stuff meat satisfactorily in one operation

The National Bucket and Teakettle Company have been recently organized at Topeka, Kan., with a capital stock of $200,000. The company will manufacture a general line of tin, copper and brass stamped ware, and will also be prepared to manufacture specialties for other parties. In addition to this they have specialties in the shape of a milk bucket, in the use of which the ordinary milk stool is done away with; and of a teakettle cover, which is so constructed as to avoid the necessity of its ever being removed. It is stated that their plan in the handling of these articles and operating the factory is something entirely new in the line of operating patents and territory in connection with a stock company. It is co-operative to such an extent as to enlist the active service of every person holding stock or territory. They expect to start the factory about September 1, employing about 500 men.

Miscellaneous

At the United States Circuit Court at Pittsburgh last week three suits were filed against W. J. Raney, coke operator, of Fayette County, Pa. The first was by Jas. M. Long, to recover $175,306.25, claimed to due on the contract to purchase 358 acres of coal land in Franklin Township, Fayette County, Pa. The second was entered by Robert S. Boyd to recover $30,000 damages for 101,108 bushels of coal alleged to have been ruined by defendant on coal land belonging to the plaintiff. Philip Reegan sued for a like amount of damages for 128,792 bushels of coal claimed to have been ruined on land owned by him.

The Reorganization Committee of the Westinghouse Electric and Mfg. Company of Pittsburgh will make a final effort to secure the assent of all the stockholders to their plan of reorganization before the date of the adjourned meeting to be held on July 25. Last week notice was given to the non-assenting stockholders that after July 8 no more stock will be received by the Mercantile Trust Company, except upon additional conditions to those contained in the circular issued two months ago. The nature of the new conditions have not been stated, but it is inferred to be detrimental to the interest of those holders who decline to contribute to the success of the reorganization. It is stated that about 75 per cent. of the common stock has already been turned into the Reorganization Committee.

The American Vault, Safe and Lock Company, at present located in Chicago, have decided to remove their plant to Elizabeth, Pa., about 30 miles from Pittsburgh. The firm are now moving their machinery from Chicago to Elizabeth and have already commenced work on their buildings, which they expect to complete within the next three months and put in operation. The plans adopted for the building to be erected call for an L-shaped building, one wing of which will be 200 feet long by 80 feet wide, two stories high. The other will be 378 feet long by 80 feet wide, and one story high. The machinery will be so arranged that raw material will enter at one end of the structure and the work will be as nearly continuous as possible until the finished safe leaves the building at the further end.

Among recently authorized corporations in Illinois are the following: The Patton Adjustable Store Shelving Company, at Chicago; capital stock, $100,000; for the manufacture of store fixtures; incorporators, J. W. Patton, Jacob Hendershott and G. W. Cole. The Karl Check Hook and Novelty Company, at Chicago; capital stock, $100,000; for the manufacture of novelties; incorporators, G. W. Cole, K. G. Bareis and J. E. Harder. The Rockford Flour Sieve Company, at Rockford; capital stock, $25,000; for the manufacture of flour sieves; incorporators, John Thelberg, H. Wallerstedt and R. G. McEvoy. Railway Supply Foundry Company, at Chicago; capital stock, $60,000; for general manufacturing; incorporators, Irwin Veeder, W. M. Rheem and O. R. Barnett.

The Ansonia Brass and Copper Company of New York have fitted up their copper-rolling mill with new and improved machinery for rolling Tobin bronze piston rods up to 5½ inches in diameter. These piston rods are now being used by the leading pump makers of the United States.

PERSONAL.

Among those who sailed for Europe last Saturday were James A. Burden of the Burden Iron Company, Troy, N. Y.; A. J. Moxham of the Johnson Company, Johnstown, Pa., and A. A. Arthur of Middlesborough, Ky.

Joseph Block of Cincinnati, general manager of the Block-Pollak Iron Company, sails for Europe from New York on the 4th inst. He will be absent about three months, and will visit the principal cities of Great Britain and the Continent.

Charles Ridgely, president of the Springfield Iron Company of Springfield, Ill., sails for Europe from New York on the 9th inst., and will spend some time at one of the principal mineral springs in Germany for the benefit of his health. He will be accompanied by Mrs. Ridgely.

Edward L. Ryerson, president of Joseph T. Ryerson & Son of Chicago, sailed for Europe last week to spend the summer, and will visit the leading points of interest.

A. Fletcher of W. & A. Fletcher, Hoboken, N. J., has gone abroad.

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The Hackney Power Hammer.

A power hammer embodying many new features has just been placed on the market by the Hackney Hammer Company of Cleveland, Ohio. Mounted on top of a suitable frame is a forged steel crankshaft working in phosphor bronze bearings. The crank works in a yoke attached directly to the upper end of a cylinder, which is thus given a vertical reciprocating motion in slides formed in the standards. Within the cylinder is a piston, which is attached to the hammer head by the usual rod.

On the shaft is mounted a tight and a loose pulley. When the belt is thrown on the tight pulley a uniform vertical reciprocating motion is at once given to the cylinder. But until the treadle is pressed down the hammer head remains stationary, as it is gripped by a brake block let into the inside of the frame and controlled by the treadle. An outlet valve in the back of the cylinder, the aperture of which is also controlled by the treadle, is so arranged that no appreciable force is exerted on the piston. When the treadle is pressed down by the foot of the operator the brake is withdrawn and the aperture of the valve affected, and a more or less heavy blow is delivered, depending on the extent to which the treadle is pressed down. If pressed quite down, the first blow is of the full capacity of the hammer, as the cylinder always travels at full speed. The hammer head stops instantly on withdrawing the pressure from the treadle, so that even drop forging has been done entirely satisfactorily under the hammer without any special preparations. The fly wheel with counterweight insures steady motion and small duty on the belt. At each stroke air is admitted through the inlet valves in the front of the cylinder, so that the piston is always suspended between two cushions of air, which prevent all undue jar and concussion. This combination of air cushions and frictional brake, both so thoroughly under control, makes the hammer very powerful and adapts it to any kind of work. These hammers are regularly built in six sizes, ranging from 50 to 500 pounds, the nominal size of the hammer being the weight of the head, rod and piston. The 50-pound hammer weighs 2500 pounds, stands 6 feet 2 inches high over all, has 7 inches travel of head, uses dies 5½ inches long, is driven by a 3½-inch belt running on a 10-inch pulley, and will deliver 350 to 380 blows per minute. The 500-pound hammer weighs 14,000 pounds, stands 8 feet 5 inches high over all, has 14 inches travel of head, uses dies 14 inches long, is driven by a belt 5 inches wide running on a pulley 24 inches diameter, and can strike 200 to 250 blows per minute.

OBITUARY.

W. W. TAYLOR.

Roberts, Willis & Taylor Company, Sherman, Texas, in a circular issued under date June 25 announce the death of their W. W. Taylor, which occurred at Eureka Springs on June 23. We make the following extract from their announcement, which refers in graceful terms to Mr. Taylor's decease, and the high esteem in which he was held by his associates :

Next to his immediate family, with whom we mingle our deepest grief, and who have our most heartfelt sympathy, none will so deeply lament his loss as ourselves. For more than ten years have we been most intimately associated together, and from his gentle and loving spirit never has an unkind word passed between us. Words are too feeble to express the loss to us of his wise council and conservative judgment as a member of the firm.

It is also stated that the style and management of the business will undergo no change, but will be continued by the survivors as heretofore.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., June 30, 1891.

The first half of the year closes on a market little if anything different to that at the close of 1890. Prices are very near the same to-day as they were at that time, the only advance being in Steel Rails, which are about $2 higher. Plates and Bars were a little dearer, but the market soon weakened, so that for all practical purposes prices for Iron during the half year have neither gained nor lost. The period of greatest depression appears to have been during the latter part of April, and although the recovery has been very slow and very small yet there is an appreciable firmness in Finished Iron and Steel Billets and to some extent in Pig Iron as well. But at best the position is unsatisfactory, and while there appear to be plenty of reasons for expecting an improvement the trade are by no means sanguine on that point. There seems to be an undefined fear of something that is perfectly inexplicable. We have good crops, low prices for all manufactured articles, while stocks are at an unusually low point, yet there is no snap to business, and no one cares to buy anything that is not absolutely necessary. How long this will continue it is impossible to say, but there are no immediate indications of change, and probably won't be until after the holiday season, and perhaps not then. The financial position is supposed to be largely responsible for this feeling, not so much in this country as in Europe. We bought heavily in anticipation of higher duties, and, besides this, Europe has been compelled to realize on American securities, so that gold shipments have become a necessity. Ordinarily European bankers carry large balances in the United States, but it is understood that these have been withdrawn to meet the exigencies of tight money in Europe Meanwhile there is a partial paralysis on this side, not because of any immediate scarcity of money, but there is no demand for railway and similar investments, consequently there is very little money among the railways, and, as these should be, and would be, the best customers the Iron trade could have if money was easy; the absence of demand from that source is an insurmountable obstacle to any general improvement in the Iron trade. The magnificent crops are depended upon to relieve the country financially, but it will take time to do this, and there are not a few who believe that it will hardly be felt at all this year. On the other hand, it should be remembered that this country is said to have the habit of discounting the future, in which event things may start into activity at almost any moment. Meanwhile no one seems to be very sure of anything, and until this feeling of uncertainty is removed and confidence thoroughly re-established trade will continue to drag as during the half year now closing.

Pig Iron.—The market is about as dull and as uninteresting as it is possible for it to be. Six months with 50¢ ℔ ton as the extreme fluctuation is a most unusual record, yet that is the fact as regards the first half of 1891. The immediate outlook for the next six months is equally unpromising, although it is hardly possible that the monotony can continue very much longer. For the present, however, there is no disposition to abandon the beaten track ; consumers take what they require at quoted rates, and this, so far, has been sufficient to absorb the current offerings without affecting prices. The supply for the last half of the year promises to be larger than during the first half, but as consumption is expected to be larger also, one may offset the other. At all events, there is nothing in sight yet to influence values, favorably or the reverse. The demand is expected to be light during the next couple of weeks, and as consumption will be almost entirely suspended, there may be some little accumulation, but for the present quotations are maintained at about the figures recently ruling, and so far without any special pressure on the part of sellers. At the same time, there is reason to believe that material could be picked up in some quarters at slightly lower figures than are usually quoted, but in the absence of inquiries of this kind, small and medium sized lots are taken at prices as follows (delivered), price according to brand, location of furnace, &c. :

Ohio Softeners, No. 1x	$19.00	@	.....
Ohio Softeners, No. 2x	18.00	@	$18.25
Standard Penna, No. 1x	17.75	@	18.00
Standard Penna, No. 2x	16.50	@	17.00
Medium Penna, No. 1x	17.25	@	17.50
Medium Penna, No. 2x	16.00	@	16.25
Virginia, No. 1x	16.75	@	17.50
Virginia, No. 2x	15.75	@	16.00
Standard Neutral All-Ore Forge	14.75	@	15.25
Ordinary Forge Cinder mixed	14.00	@	14.25
Hot-Blast Charcoal	20.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

Ferromanganese.—There is quite a good deal of inquiry, but the domestic product appears to pretty well control the market. There are bids of $64 for 80 %, duty paid, but importers quote $64.50 @ $65 without much prospect of concessions being made, although freights are very favorable.

Steel Rails.—Business is in about the same condition as for some time past, and with no immediate prospect of change. Mills fairly well filled up for several weeks to come, and prices steadily held at $30 at mills.

Steel Billets.—Prices are nominally from $28.25 to $28.75 for deliveries in this vicinity, or $27.75 to $28.25 for points on the Susquehanna, or its equivalent, but there is very little actual business, and probably none whatever at these figures. Buyers are not at all anxious to place orders, although at concessions of about 50¢ per ton it is probable that something might be done, but the feeling at the moment is one of comparative indifference.

Muck Bars.—Market dull but firm. Holders quote $27.25 @ $27.50, delivered, and some business has been done at $27 @ $27.25, but as a rule consumers are disposed to hold off as long as they can, hoping to get in on more favorable terms.

Bar Iron.—The demand appears to have been pretty well satisfied, and mills are all preparing for the usual midsummer suspension of work. Meanwhile there is no special inquiry for Iron, and in the absence of demand prices are nominally unchanged—say 1.75¢ @ 1.85¢ for city delivery or 1.70¢ @ 1.75¢ at interior points. What sort of prices will rule later on is an open question. Manufacturers are waiting to see what turns up in regard to the labor scale, and until that matter is settled there is no disposition to look for business, unless at the figures above named, and for similar reasons buyers are inclined to take the same position—viz., to wait for developments.

Skelp Iron.—Market very quiet. There are buyers at about 1.70¢, delivered, and some sales at 1.72½¢, but sellers usually quote 1.75¢ for August deliveries.

Plates.—The market has shown a fair degree of activity, and mills have been running to their full capacity trying to meet calls on them prior to the holidays. There is a moderate amount of work on hand for next month's deliveries, but apart from boiler work there has been no special demand since date of our last report and there is some anxiety to see wha

amount of business will be developed during the next two or three weeks. Meanwhile sales have been at about the following prices, delivered :

	Iron.	Steel.
Tank Plates	2.00 @ 2.10¢	2.05 @ 2.20¢
Refined	2.20 @ 2.30¢	2.05 @ 2.10¢
Shell	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—A moderate demand is reported for small lots for quick delivery, but there is no material change in the position. A good deal of important work is under negotiation, but it may be some time yet before it is definitely arranged. Meanwhile prices are unchanged, as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.— Thin Sheets are very dull, but there is a good demand for other descriptions at about the following prices for best makes, viz.:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.10¢ @ .....
Best Refined, Nos. 25 to 26	3.20¢ @ 3.30¢
Best Refined, No. 27	3.40¢ @ .....
Best Refined, No. 28	3.50¢ @ .....

Common, ¼¢ less than the above.

Best Soft Steel, Nos. 14 to 20	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ ....
Best Soft Steel, Nos. 25 to 26	4¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Rails—Iron are virtually out of the market, so that no reliable quotations can be given. Steel are wanted at $17.50 @ $18, delivered, but holders usually ask $18 @ $18.50, with sales at both figures, according to quantity and point of delivery.

Scrap Iron.—Dull, at unchanged prices, which are about as follows: No. 1 Railroad Scrap, $20.50 @ $21, Philadelphia, or for deliveries at mills in the interior $21 @ $22, according to distance and quality; $15 @ $16 for No. 2 Light; $14 @ $15 for best Machinery Scrap; $13 @ $14 for ordinary; $15 @ $16 for Wrought Turnings; $10 @ $10.50 for Cast Borings, and nominally $24 @ $25 for Old Fish Plates, and $16 @ $17, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—Business is quite active, but prices are still weak and unsettled. Nominal discounts are as follows:

Butt-Welded Black	55 %
Butt-Welded Galvanized	45 %
Lap-Welded Black	65 %
Lap-Welded Galvanized	52½ %
Boiler Tubes, 2¼ inch and under	55 %
Boiler Tubes, 2¼ inch and larger	60 %

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, July 1, 1891.

Pig Iron.—There has been nothing of decided encouragement developed during the week. Consumers of Pig Iron have evinced a disposition to buy only for immediate necessities and be ready to take advantage of any possible fluctuations in the market which may be in their favor. That the offerings of Iron would be urgent if there was any probability of securing buyers for round lots is apparent. While the price of Gray Forge remains at $10, at the furnace, for any delivery running through the year, it is not much better than nominal, for there is plenty of offerings without takers and it is highly probable that $9.90 would be accepted; in fact, one sale for prompt shipment has been made at $9.75, spot cash at Birmingham; but this was in the nature of a forced sale and is exceptional. Of other varieties of Iron there have been small sales, including nearly every kind, at these quotations, which in the aggregate are considerable, but very far from being satisfactory. Currency has been given to the story of large purchases of Iron by a new Southern pipe works; the facts appear to be that this is in contemplation, rather than accomplished. Much stress is laid upon the actual and probable outcome of the wheat crop to favorably affect the Iron trade, and doubtless this will be its tendency, but its influence will be far in the future, rather than in the early months, and it is useless to encourage hopes only to disappoint them. The most that can be said of the market is that there is a steady consumptive movement, but a very quiet trade. Quotations are unchanged, as follows :

Foundry.	
Southern Coke, No. 1	$14.75 @ $15.00
Southern Coke, No. 2	13.75 @ 14 00
Southern Coke, No. 3	13.25 @ 13 50
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.50
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	20.00 @ 21.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16 00 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.00 @ 16.00
Forge.	
Gray Forge	12.75 @ 13.00
Mottled Neutral Coke	12.25 @ 12.50
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	19.25 @ 19.75
Hanging Rock, Cold Blast	25.00 @ 26.00
Lake Superior Car Wheel and Malleable	18.00 @ 18.50

Cleveland.

CLEVELAND, June 29, 1891.

Iron Ore.—About the only change in the local situation during the past week has been the advance in Ore freights, the vesselmen now obtaining 90¢ from Marquette to Ohio ports. There have been sales of Gogebic Bessemers during the week at $4.30 @ $4.50, and of Non-Bessemers at $3.75 @ $4. The high-grade Ores from Minnesota mines seem well sold up. The Champion has disposed of nearly all its prospective output at $5.50 ₱ ton, or $1.25 below last season's quotations. The Minnesota Ores have been in good demand during the week just closed and are nearly all sold out. The furnaces east of the Alleghenies have bought liberally of new Ore during the past ten days and large quantities of Non-Bessemers have been contracted for in the Mahoning and Shenango valleys. Ore is now coming down the lakes at a great pace, and the railroads are busily engaged in clearing the docks of last year's output. A few of the furnacemen in the Mahoning and Shenango valleys are filling out their orders this week, paying about $4.50 for Bessemer Ores from the Gogebic range, and $3.75 for Non-Bessemers.

Pig Iron.—The market is probably a bit stronger, but is not very active. Scattering sales of Bessemer Iron at $16.50 are reported, but the amounts were small. Dealers report a fair demand for July delivery, but no very large transactions seem to have taken place. Mill Irons are in considerable demand, but are not easy to obtain at any price, stocks being reported very low.

Old Rails.—A 1000-ton lot of Old Americans was offered during the past week at $22.40. Quotations are now announced at $22 @ $22.25, with only a few sales reported.

Manufactured Iron.—The mills report a fair amount of business. A large amount of Structural Iron is being made. Common Bar is still selling for 1.60¢ @ 1.65¢ from the mills.

Scrap.—Not much is being done, although a few lots of No. 1 Railroad Wrought have been sold at $19.50. Cast Scrap is in small demand, and Old Iron Wheels are not much wanted at $17.50 @ $18.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date June 29, say: The past week has been a decidedly lively one in the matter of large or comparatively large sales. This particularly refers to the movement of Lake Superior Charcoal Pig Iron, a number of contracts aggregating several thousand tons having been placed in the Eastern and Central markets, distributed about evenly between the malleable and car wheel manufacturers. June this year, as it did last year, will round up the largest tonnage sold, by a broad margin, of any month of 1891 for Lake Superior Charcoal Pig. Prices varied but slightly from those ruling for the past six weeks. If anything, a rather stronger market was seen by the fewer concessions made buyers, who wanted longer deliveries than they obtained in most cases. Northern-made Coke Irons are apparently intent upon regaining both the trade and position which they occupied before they voluntarily shut down in the Mahoning and Shenango valleys, and have taken some considerable orders at ruling figures, extending deliveries over the balance of the year. No transactions were reported in Southern Cokes, but the regular steady trade which they have so long held was continued at the ruling low figures, however. There is positively no change in the market figures, which are as follows :

Lake Superior Charcoal, all numbers	$18.00 @ $18.50
Lake Superior Coke, Bessemer	18.00 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.25
Lake Superior Coke Foundry, all ore	18.00 @ 18.50
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery	18.00 @ 18.50

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, June 29, 1891.

Pig Iron.—The market fails to show any change worthy of note. There is a trifle more firmness noticeable in some directions. Gray Forge is offered on the basis of $10, at the furnace, for deliveries extending through the year. The consumption of Pig Iron shows a falling off so far as this section is concerned, as the result of the extremely warm weather prevailing, necessitating the closing down of some establishments. The Southern furnaces are not disposed to shade the prices as quoted below, as they anticipate a better market and higher prices after August 1. There are some few furnaces, however, who are never satisfied unless their entire product is sold months ahead, and these are the sellers to-day. Whether they will be able to congratulate themselves during the next three or four months is difficult to determine, but indications certainly point to a higher range of values and a consequent loss to these furnaces. The local trade is light and agents report a few small-sized orders at current rates. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry	$15.50 @ $15.75
Southern Coke, No. 2 Foundry	14.50 @ 14 75
Southern Coke, No. 3 Foundry	14 00 @ 14.25
Gray Forge	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry	17.75 @ 18.25
Southern Charcoal, No. 2 Foundry	16 75 @ 17.25
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.50 @ 18.75

Bar Iron.—The mills continue to report a fairly active trade at current rates. Some cutting is reported, but on the whole prices are fairly well maintained. Railroads are giving out some little work, which helps the situation considerably. Prices, as stated above, are fairly well maintained, as follows : Lots from mill command 1.70¢

@ 1.75¢, delivered on cars at East St. Louis. Small lots from store command 1.82½¢ @ 1.87½¢.

Barb Wire.—Mills are not overrun with orders, and are stocking up as much Wire as they are selling. This, however, is expected at this season of the year. The result of the meeting held in Chicago recently, will no doubt make itself felt within the next 30 days. Prices to-day are quoted as follows: Painted, 2.70¢ @ 2.75¢; Galvanized, 3.25¢ @ 3.30¢, according to quantity.

Wire Nails.—There is no special change to report in this department; mills report extreme dullness at $2 @ $2.05 for carload lots.

(*By Telegraph.*)

The demand for Pig Lead has been quite active during the past week and several hundred tons have changed hands on the basis of 4.30¢ for early July delivery; for later deliveries 4.35¢ is asked and paid. The outlook is of an encouraging nature and prices are in a fair way to advance unless something unforeseen happens. In Spelter there is absolutely nothing to say. There are no inquiries and no sales, and prices are purely nominal at 4.70¢ @ 4.75¢.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, June 30, 1891.

Pig Iron.—There is still considerable inquiry for Bessemer Iron, with furnaces pretty well sold up for the next two months, and the market is strong and higher, with a sale of a block of 5000 tons reported at $16.50, which may now be regarded as the ruling price. It may be well to note in this connection that while furnaces are well sold ahead, consumers generally have covered their requirements for some time to come, and the probability is that the demand will not be as urgent in the near future as it has been in the past few weeks, when consumers, impressed with an apprehension that prices would go higher, were anxious to anticipate future wants. In regard to Forge Iron, there has been no important change during the past week. There is a continued good demand, and the feeling on the part of furnacemen is firmer, but prices remain unchanged. City consumers are nearly all supplied by city furnaces at $14 cash deliveries, which nets the furnace from $13.75 to $13.85 at furnace, as the freight rate ranges from 15¢ to 25¢ ℔ ton. There is very little valley Iron being sold here, for the reason, as stated in former reports, that valley furnacemen can do better at home. Foundry Irons continue quiet but an improved demand is looked for early in July. We quote as follows:

Neutral Gray Forge	$13.75 @ $14.00,	cash
All-Ore Mill Iron	14.50 @ 14.75,	"
White and Mottled	13.00 @ 13.50,	"
No. 1 Foundry	16.50 @ 17.00,	"
No. 2 Foundry	15.50 @ 16.00,	"
No. 3 Foundry	14.75 @ 15.00,	"
No. 1 Charcoal Foundry	22.00 @ 22.50,	"
No. 2 Charcoal Foundry	21.00 @ 21.50,	"
Cold-Blast Charcoal	25.00 @ 27.00,	"
Bessemer Iron	16.40 @ 16.50,	"

So far as we are advised at the present writing, there have been no sales of Bessemer above $16.50. An occasional sale of Southern Forge Iron is reported at prices ranging from 25¢ to 35¢ ℔ ton below that obtained for city Iron, consumers generally being willing to pay the difference, as they are familiar with the latter and know what they are and will do, whereas they are a little suspicious of the former.

Muck Bar.—We have to report more inquiry and a stronger market in consequence. However, there is usually an increased demand at this season of the year, when the output is considerably curtailed, owing to the hot weather. A good many puddlers are doing just as little as they can help, in consequence of the heat, and this, in connection with an increasing demand, has produced a stronger market. Sales reported during the week under review at $26.50 @ $27 cash; one lot, a special size, at $27.25. It is worthy of mention that Muck Bar is now worth more than Steel Billets.

Manganese — Continues quiet, while prices remain unchanged. Small sales of 80 % domestic Ferromanganese at $66.50, for immediate or near-by delivery. There has been very little foreign sold in this market for some considerable time past. It cannot well be sold in this market in competition with domestic.

Manufactured Iron.—There is a continued good degree of activity, mills generally are busy and the outlook is considered as being favorable for the last half of the year. The wage scale has not yet been settled, and manufacturers refuse to sign until new clauses inserted therein are stricken out. The general belief, however, is that there will be no contest, as neither side want a strike. Manufacturers express a willingness to renew the old scale, and the probability is that the Amalgamated will accept the same, until they can do better. However, a good many mills, both here and in the Mahoning Valley and Wheeling districts, will shut down for a week or two to take stock and make repairs, and the output will be considerably reduced thereby. Prices remain unchanged. Bars, 1.65¢ @ 1.70¢; Tank and Plate 2.10¢ @ 2.15¢; No. 24 Sheet, 2.75¢ @ 2.80¢, all 60 days, 2 % off for cash. Skelp Iron is in freer demand, with sales of Grooved at 1.62½¢ @ 1.65¢, and Sheared at 1.82½¢ @ 1.85¢, four months, 2 % off for cash. Since the McKinley bill became a law there has been a decided revival in the Cotton-Tie industry, which for a number of years was dead, England furnishing the entire supply for this country, which, it is said, aggregates about 100,000 tons. This Cotton-Tie business has been distributed among several firms, including Painter & Sons, Lindsay & McCutcheon, W. Clark & Sons of this city; Cartwright, McCurdy & Co. of Youngstown, Ohio, and A. R. Whitney & Co., New York. Painter & Sons made a single shipment of 3000 tons by river a few weeks ago to Memphis and New Orleans.

Nails.—There has been nothing specially new developed in the Cut Nail trade during the past week, nor is to be expected—first, as the close of the first half of the year when business is usually light; and then the carpenters' strike has had considerable to do with curtailing the demand, particularly in this section of the country. Prices are still quoted at $1.55 @ $1.60, according to average and specification, 60 days, 2 % off for cash. The Wire Nail trade has been more active and firmer during the past week or two, with the factories hereabout pretty well sold up for July and August. We now quote at $1.90 @ $1.95, f.o.b. at factory, 60 days, 2 % off for cash, with some firms refusing to sell below $1.95. It is believed that some of the largest buyers, impressed with the belief that prices were low, have been buying freely, and to this may be attributed the firmness to which reference has been made.

Wrought Iron Pipe.—There appears to be an increasing degree of activity, and the Pipe mills are now pretty well employed. No change in prices. Discounts on Black Butt Pipe, 55 %; on Galvanized do., 45 %; on Black Lap, 65 %; on Galvanized do., 52½ %; Boiler Tubes, all sizes up to 2¼ inches, 55 %; 3 to 6 inch inclusive, 65 %; 7-inch and upward, 55 %; Casing, all sizes, 55 %. The July meeting of the manufacturers' association takes place in New York, and it is intimated that an advance in prices is not improbable.

Structural Material.—There is only a fair business, although it is all, probably, that can be expected in view of the labor complications. The carpenters' strike has been a serious blow to the local business, but for which there is every reason to believe sales would have been large. We continue to quote prices as a week ago: Channels and Beams, 3.10¢; Angles, 2¢; Steel Sheared Bridge Plates, 2.10¢ @ 2.15¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

Steel Plates.—There have been no large contracts placed here of late, but the mills making a specialty of the same still appear to have about all they can do working up old contracts. Prices remain unchanged: Tank, 2.10¢; Shell, 2.45¢; Flange, 2.65¢; Fire-Box, 3.90¢ @ 4.25¢.

Merchant Steel.—Demand is still reported light, as it usually is at this particular time. Prices remain unchanged: Crucible Tool Steel, 7¢ @ 7½¢; do., Spring, 4¢; do., Machinery, 4½¢ @ 5¢; Bessemer Spring Steel, 2.50¢; do., Machinery, 2.40¢ @ 2.50¢; Toe Calk, 2½¢; Tire Steel, 2.20¢; Steel Bars, 1.85¢ @ 1.90¢, full extras.

Barb Wire.—There is a less active demand, and manufacturers being more anxious for business, it is intimated that an order for a round lot might be placed below the association rates. However, we continue to quote the syndicate rates, as follows: Glidden Painted, $2.85; do. Galvanized, $3.40; Four-Point Painted, $2.80; do. Galvanized, $3.30, all in car lots, f.o.b at maker's works.

Steel Billets.—There is still considerable inquiry, and the market may be quoted firm at $25.50 @ $26, cash, at maker's mill, with one sale reported at $26.25. Muck Iron is now worth more than Steel Billets, and there appears to be more inquiry for the former than the latter.

Wire Rods—Are still quoted at $36 @ $36.50, f.o.b. at mill. Some of the mills are reported pretty well sold up for July and August.

Old Rails.—There is continued inquiry for Old Steel Rails, but prices remain unchanged: $17 @ $17.50 for short and $18 @ $18.50 for long pieces. Old Iron Rails continue neglected, and in the absence of sales may be quoted at $22.50 @ $23.

Railway Track Supplies.—There is an increasing demand reported for almost everything in this line, but no change in prices. Spikes, $2 @ $2.05, 30 days, f.o.b. at mill. It is intimated that large lots can be had below 2¢, Splice Bars, 1.80¢ @ 1.90¢; Track Bolts, 2.75¢ @ 2.85¢.

Steel Rails.—There is a continued fair demand and the market is steady at $30, f.o.b. at mill. Carnegie Bros. & Co. are working two mills on Rails—the Edgar Thomson and Duquesne—from which it is evident that they are pretty well supplied with orders, otherwise they would not take the Duquesne off Billets and start it on Rails.

Old Material.—Dealers nearly all report business as being very dull, as it always is at this particular time, when many of the mills are being shut down for stock taking and repairs, and no improvement in the demand will be looked for until the latter part of the month. No. 1 R. R. Wrought Scrap, $19, net ton; Steel Rail and Bloom Ends, $17 @ $17.50 gross.

Connellsville Coke.—There is a continued steady demand, but no change in prices. Blast Furnace Coke, $1.90; Foundry $2.30; Crushed, $2.65 ℔ ton of

2000 lb, f.o.b. cars at ovens. The demand appears to be increasing and operators have all they can do.

During the months of July, August and September the wages at the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa., will be based on $25 as the selling price of 4 x 4 inch Billets. For the months of April, May and June wages were based on $25.50 as the selling price of Billets. The average selling price of 4 x 4 inch Billets for the three months ending June 30 was found to be $24.75, but as the minimum price below which wages cannot go is $25 that figure is the basis on which wages for the next three months will be computed.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, July 1, 1891.

More or less anxiety is caused here by the expected closing of a large number of mills for an indefinite time, pending the settlement of the wages question. Much inconvenience will result if the movement is at all general among Western mills, as so many consumers are running from hand to mouth. Mills have also been slow about filling jobbers contracts, and their stocks will run very low if their receipts from manufacturers are cut short. It may not be a good thing for the general trade, however, if the output of Manufactured Iron should be curtailed for a month or two. The restriction of production would certainly prevent prices from going lower during the dull season, which now promises to continue for another month. Fall trade would be the more active for the partial suspension of business now. Yesterday ended the first half of the year, which proved to be a little worse in nearly every respect than the most discouraged members of the trade predicted last January. No immediate prospect of improvement is seen, but the worst part of the year is undoubtedly over, and the trade can look forward with hope and fresh courage, knowing that a better condition of business is now not far distant.

Pig Iron.—The situation with regard to local Coke Iron is peculiar. The effects of the Coke strike still linger, and are noticeable in the difficulty with which orders taken in April and May, by the largest Iron manufacturers here, are being filled. Their customers have been obliged in more than a few instances to apply to other parties for Iron to meet their current necessities. In such cases a slight premium over current rates has been paid for the accommodation. This condition of affairs is only temporary, but is worth noting in view of the fact that a glut of Iron was expected by many as soon as the Coke strike should end. Sellers of Southern Coke Iron have been getting a fair number of small orders, but business in round lots has been light, perhaps covering 3000 tons. The market for this class of Iron has improved in tone since a very large Southern company withdrew its representative from this field whose efforts to sell were forcing down prices. There is a scarcity of Soft Irons, and some consumers have been urgently inquiring for them for immediate use. No. 1 Soft Southern is particularly hard to get. Charcoal Iron sales are mainly confined to small quantities, but an occasional sale of 500 to 1000 tons is reported. Prices still rule low on some brands, but others are firm at $17.75 @ $18, and we report transactions at those figures. Alabama Car-Wheel Iron is lower, as the makers are now disposed to make some effort to move their stocks. We quote for cash, f.o.b Chicago:

Lake Superior Charcoal	$17.00 @ $18.00
Local Coke Foundry, No. 1	15.50 @ 16.00
Local Coke Foundry, No. 2	15.00 @ 15.50
Local Coke Foundry, No. 3	14.50 @ 15.00
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	18.00 @ 18.50
Southern Coke, No. 1	16.00 @ 16.50
Southern Coke, No. 2	15.00 @ 15.50
Southern Coke, No. 3	14.50 @ 15.00
Southern, No. 1, Soft	15.00 @ 15.50
Southern, No. 2, Soft	14.00 @ 14.50
Southern Gray Forge	14.00 @ 14.50
Southern Mottled	13.50 @ 14.00
Tennessee Charcoal, No 1	18.00 @
Alabama Car Wheel	21.50 @ 22.50
Coke Bessemer	17.50 @ 18.00
Hocking Valley, No. 1	17.00 @ 18.50

Bar Iron.—Inquiry is light, but the mills are not lowering their quotations. Those who expect to continue in operation in July and August hope to be able to realize present prices or do better as competition drops off. Purchases made last week cannot be duplicated. The bottom rate now appears to be 1.67½¢, half extras, Chicago, for either local or Mahoning Valley Iron, while some makers ask $1 ₱ ton more for August delivery, but buyers are not yet willing to pay this price; car orders are still held back, as the railroads are unexpectedly conservative about contracting for new rolling stock, although the new wheat crop has begun to be moved.

Structural Iron.—The German Theater building was let to contractors last week, but it is not yet known who will get the Beams. This building was originally planned to be 15 stories high, but will be 18, and will take a very large quantity of Steel. Another 14 or 15 story building is soon to be ready for bids. While the building business thus continues in promising condition, despite the strike of the fitters, the bridge business is very dull, and manufacturers are receiving few and small orders from the bridge trade. Carload lots of Angles range from 2¢ to 2.15¢ at Chicago, according to quality; Tees from 2.60¢ to 2.70¢; Beams, 3.20¢ and Bridge Plates, 2.30¢ @ 2.40¢.

Other Manufactured Iron.—In Plates business has improved very decidedly. Orders from stock are much better and mill business is larger. Inquiries are in the market for considerable quantities of Steel Ship Plates and large consumers are putting out specifications for season contracts. Mill prices have shown a tendency to stiffen in view of the stoppage of operations at numerous works for an indefinite period. Dealers quote Nos. 10 to 14 Iron Sheets, 2.50¢ @ 2.70¢; Steel Sheets, 2.70¢ @ 2.90¢; Tank Steel and Iron, 2.40¢ @ 2.60¢; Shell Steel, 2.85¢ @ 3¢; Flange Steel, 3¢ @ 3.25¢; Fire Box Steel, 4.50¢ @ 5.50¢; Norway Rivets, 40 % off; Burden Rivets, 4.25¢; Boiler Tubes, 65 % off for 3 to 6-inch, 55 % off for 2¼-inch and smaller and 7-inch and larger.

Sheets.—Manufacturers of Black Sheets are generally quoting 2.85¢ @ 2.90¢ at mill for No. 27 Common, but some have not yet taken their quota of business, and they are selling at 2.90¢, Chicago, in large lots. Jobbers quote 3.30¢ for No. 27, but cuts are made on sales for immediate delivery. In Galvanized Iron no improvement is noted, the demand being light and manufacturers' prices very low. Jobbers quote 65 % off for Juniata.

Merchant Steel.—Dealers, with very few exceptions, report a quiet week. No changes have been made in prices, but Bessemer Bar Steel is gently descending toward a lower level for the general trade. Prices show no change, carloads being quoted as before—viz.: 2.30¢ for Machinery Steel, 2.40¢ for Open-Hearth Spring, 2.30¢ for Tire and 2¢ for Bessemer Bars, all from good stock. Tool Steel sells at 7¢ @ 7½¢ and upward, according to quality.

Track Supplies.—Steel Rails are in fair demand, but heavy orders are still held back. Money, however, appears to be getting easier in railroad circles, as schemes suspended in the spring for lack of capital are now being pushed and the Rails are called for. The mills are supplied with work until September, on the existing basis of operations, restricted by the consequence of the coke strike. Prices still range from $31 to $32, according to the character of the orders. Iron Splice Bars are quoted at 1.80¢ @ 1.90¢, and Steel can be had from some mills at about the same price. Spikes are again dearer, and are now quoted at 2.15¢ @ 2.20¢. Track Bolts with Hexagon Nuts are 2.80¢ @ 2.90¢.

Old Rails and Wheels.—The market in Old Iron Rails has been quite active. Transactions by local dealers have aggregated 4000 to 5000 tons for consumption at near-by mills at about the equivalent of $23 here. Holders look for better prices and ask $23.75 @ $24, but consumers are not inclined to give the advance. Old Steel Rails have also been in somewhat better request, but can still be had at $14.50 @ $17, according to length. Small transactions in Old Car Wheels are reported at $16.25.

Scrap.—The market is quiet, and large quantities are offered for sale, but dealers' quotations are unchanged as to selling prices. We quote as follows, per ton of 2000 pounds: No. 1 Railroad, $19; No. 1 Forge, $18.50; No. 1 Mill, $14; Fish Plates, $21; Axles, $23; Pipes and Flues, $13; Horseshoes, $18; Cast Borings, $8; Wrought Turnings, $11.50; Axle Turnings, $13; Machinery Cast, $12; Stove Plates, $8.50 @ $9; Mixed Steel, $11; Coil Steel, $14.50; Leaf, $15.50; Tires, $16.

Metals.—Casting Copper is in continued good demand, and carload lots are now quoted 12¾¢. Lake is unchanged at 13¢. A sale of 150 tons Copper Wire was made to local parties past week for electric purposes. Spelter is advancing. Prime Western is now worth 5¢; sales are small, but manufacturers are very firm. With regard to Pig Lead, dealers report that prices have been firm and the demand is good. A large amount of Lead has changed hands at 4.30¢ @ 4.35¢, according to brand and delivery. There is little available at the close of the week, and what there is can be had only at an advance over earlier prices.

The Block-Pollak Iron Company have purchased the entire business of Block, Pollak & Co. of Chicago and Block & Pollak of Cincinnati, wholesale dealers in Old Railway Material and Scrap. They will continue to occupy the same offices. The company have a capital stock of $200,000, full paid, and their officers are as follows: Emil Pollak, president; Isaac Block, vice-president; Louis Benjamin, secretary; Emil Benjamin, treasurer; Joseph Block, general manager.

Coal Market.

The Coal trade sales agents on Tuesday advanced prices on Stove 15¢ and on Egg and Chestnut 10¢. The dull state of the market did not warrant this step, as there were grave suspicions that the official schedule was being cut in some quarters to secure bargains, but the market will be braced preparatory to renewed activity later in the season. The independent Lehigh Coal operators make no change, and the net prices for choice brands are $2 @ $2.65 for Pea and $1.60 @ $1.90 for Buckwheat. Fancy Broken and Egg are $4 @ $4.25, Stove, $4; Chestnut, $3.85.

The six companies arranged for an output in July not to exceed 3,000,000 tons,

which is considered a conservative figure, as the tendency has been to go beyond the authorized allowance in almost every instance.

The total quantity of Anthracite Coal mined so far this year was 16,729,722 tons, an increase of 2,352,474 tons over the same period last year. The Reading tonnage for the week ending June 27 was 215,000 tons, and the Pennsylvania tonnage for the week ending June 20 was 239,000 tons. The Pennsylvania tonnage for the year thus far has been 6,388,000 tons, an increase of 724,000 from last year. Coke decreased 1,053,000 tons.

The Western Coal sales agents ordered an advance of 10¢ ℔ ton in prices for July, except for Lake Superior and Michigan distributing points.

During a violent storm in the Mahanoy Valley, the big breaker of the Patterson Colliery near Mt. Carmel, was blown down and six men were killed. The breaker was one of the largest in the region, its capacity being about 40,000 tons a month.

Reading's colliery improvements during May cost $72,000.

The Philadelphia *Press* says: "The report that competing Coal companies will endeavor to 'break' the contract between the Reading Company and the Coxes seems to be ridiculous. The effect of that contract on the trade is perfectly plain. It will cause a readjustment of tonnage and a readjustment of tolls to the extent of the concession made by the Reading Company to the Coxes. If the trade escapes a war of rates and a general fight in the coming round-up, it will be exceedingly lucky. The Lackawanna and Delaware and Hudson are determined that the Reading shall not outship them."

Financial.

A general slackening of trade is indicated by the continued accumulation of money, and consequent lowering of the rates of interest, this, too, notwithstanding the shipment to Europe of $5,000,000 more during the past week, making the total net exports for the season upward of $70,000,000. High financial authority gives these exports as a reason for this depression, and would have it understood that a period of unusual activity in trade may soon be expected, unless new suspicions are excited concerning the stability of values. A feeling of distrust, it is reasoned, explains the difficulty in obtaining money on long time, while money on call loans is at nominal rates. Assuming this to be a correct diagnosis of the situation, there is reason for satisfaction that Secretary Foster decided to limit silver coinage for the present to the conversion of trade dollar bullion into standard dollars, putting a stop to the regular monthly coinage arrangement until the subject shall be considered at a later day. In addition about $3,000,000 of subsidiary silver will be put into Bland dollars and added to the circulation in the shape of certificates, processes which will occupy about four months. The rate at which the 4½ % bonds are to be continued was not decided. Crop news continues favorable. Harvest in Kansas was stopped by heavy rains, but there were no storms east of the Mississippi. The Produce Exchange will close from Thursday to Monday morning.

A feature of the week is the extraordinary importation of tin plates prior to July 1. Six cargoes at the docks are estimated to contain 200,000 boxes or 2000 tons.

The stock market was irregular and prices inclined to a lower basis. The news on Friday that more gold would be shipped on Saturday had a decided influence, and the market was unsettled and lower, with a sharp fall in National Cordage common stock as the principal feature. Although the bank statement was favorable the market was freely sold in the final dealings. The feature of the situation, aside from the gold movement, is the almost entire absence of inquiry on the part of investors, as is shown by the low prices for first-class railroad stocks and bonds. On Monday some buying on European account caused a little steadiness, but New England and Northern Pacific broke sharply. The coalers were weak on statements that some of the producers were selling under the schedule prices and had made contracts at the cut rates.

United States bonds were steady at the following quotations:

U. S. 4½s, 1891, registered	100
U. S. 4½s, 1891, coupon	100
U. S. 4s, 1907, registered	116½
U. S. 4s, 1907, coupon	117½
U. S. currency 6s, 1895	109

New York.

Office of *The Iron Age*, 96-102 Reade street,
NEW YORK, July 1, 1891.

American Pig.—The market is still very quiet, and Northern furnacemen generally hold prices well. Even small concessions are not made, for very desirable orders, by makers of standard brands of Foundry Iron. Northern brands are quoted at $16.75 @ $18 for No. 1; $16 @ $16.50 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Irons sell at $16.25 @ $17.25 for No. 1; $15.50 @ $16.25 for No. 2; $15.75 @ $16.50 for No. 1 Soft, and $14 @ $14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Some business has been done lately in Spiegeleisen. An Eastern Steel mill has purchased a round lot of foreign, and another works has taken 600 to 700 tons of domestic, all at private terms. German 20% can be laid down at $27.50, while English commands more. Ferromanganese is quoted $64 @ $64.50 for 80 %.

Billets and Rods.—The Eastern Billet market is firmer, in sympathy with the West, where Billets cannot now be purchased at less than $25.50. Rods are quiet in the East and may be quoted $38 at tidewater.

Steel Rails.—Instructive conclusions may be drawn from the figures of railroad milleage built during the first half of this year, compiled by the *Railroad Gazette*. Our contemporary estimates that the mileage completed during the first six months was 1610 miles, against 2055 miles during the corresponding period last year. Estimating requirements at 90 gross tons per mile, the consumption for new track was roughly 150,000 gross tons during the first half of this year, against about 190,000 tons during the first half of 1890. It is estimated that the shipments of Standard Rails during the first six months this year have been 450,000 gross tons. Last year the figure for the mills in the association was 713,205 gross tons, or adding the Allegheny 775,000 tons. Deducting the requirements for new track from the shipments we obtain a fair idea of the amounts taken for renewals. Last year during the first six months they were, therefore, approximately 585,000 tons. This year, during the same period, they have only been 300,000 tons. This gives numerical expression to a fact generally known, and appreciated, the fact that track repairs have been kept down to the lowest possible point by the railroads throughout the land. Current repairs for the enormous mileage of this country are estimated to call for between 900,000 and 1,000,000 gross tons as a minimum. In other words, the poverty of the railroads or their anxiety to keep net earnings at a respectable figure has caused them to withhold necessary orders for Rails to the extent of from 150,000 to 200,000 gross tons in six months. That business is, of course, only deferred. The burning question in the Rail trade is whether it will come out wholly or in part during the next few months or whether it is to hold over for another year. The indications thus far, it must be frankly acknowledged, are that the mills will not be called upon to roll more than a fraction of this delayed tonnage this year. It is even very doubtful whether the second half will get its fair quota of renewal work, which would be 450,000 to 500,000 tons. Nor is the outlook for new mileage very brilliant. Indeed, it is a question whether the second half will carry the total for the year to 5000 miles, which would call for 3400 miles in the next six months. It is true that the great Western mills were idle during the first part of this year and that therefore they are now rushed in making deliveries, so that the shipments of the first six months are probably below the average. But orders have been coming in very slowly during the last month and inquires are on a moderate scale. While it is probable that the second half will be considerably better than the first, the outlook is not favorable for even as good a Rail year in 1891 as was 1890, which was decidedly not above the average. During the current week no sales of any consequence were made by Eastern mills, which continue firm at $30.75 @ $31 at tidewater.

Rail Fastenings.—The majority of makers are asking $2 @ $2.10 for Spikes, but the price is shaded by middlemen, who may, however, at any time withdraw their quotations. We quote Fish Plates 1.70¢ @ 1.80¢, and Bolts 2.65¢ @ 2.80¢.

Manufactured Iron and Steel.—A fair amount of work is coming up and the mills are moderately well employed. Bridge makers are still quoting very low figures, the withdrawal of one concern from the market, with a full order book, being followed at once by the appearance of other needy sellers. The closing down by the struggle with the Amalgamated Association of two Eastern mills is not likely to affect the market materially, orders in hand being shifted to others. We quote Angles, 1.95¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank, 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Old Rails.—For Old Iron Rails in small lots $20.50 is being offered by consumers. The market is lifeless.

Metal Market.

Pig Tin.—Lower prices cabled from London have had the effect of weakening values of the metal in the local market, and the downward movement seems to have arrested rather than stimulated speculative action. Purchases for consumption have averaged rather larger, thus relieving the burden of large holders in some degree; but the amount of stock carried here is yet considerable, and the appearances are that without support from the foreign center the local holders may not have things all their own way. Ten-ton lots have been sold at 20.25¢ for July and 20.35¢ for August delivery during the week, followed by transactions in July delivery at up to 20.40¢. Wednesday's market was firm, with business at 20.40¢, net cash, for spot stock. Straits shipments last month were 2575 tons, against 2250 tons in May.

Copper.—Small parcels of Lake Superior Ingot have been secured at 12¾¢ @ 13¢ for prompt delivery, and additional

quantities could doubtless be secured at within that range, although the popular idea of value on the part of sellers is 13¢. Transactions have been on a moderate scale, and the demand is no livelier at the present time than it was a week ago. Arizona Ingot is still quoted comparatively high at 12½¢, and for casting brands 12¢ is named as being a very close rate. Those figures, however, are looked upon by home consumers as being unnaturally high, despite the extent to which the output of furnace material is being absorbed by deliveries on late sales made in the foreign markets, and purchases are confined to imperative wants for the time being.

Lead.—Purchases for consumption have been on a very moderate scale. In fact, operations involving more than a carload at a time figure as the exception in the business of the week. The offering has been on a smaller scale than the demand, however, and prices are a shade higher despite the quiet condition of the market At the moment 4.47½¢ is considered as being inside price for either carloads or larger quantities ; 4½¢ was the popular quotation at the close, and a small sale at that was reported.

Spelter.—Limited offering and decided firmness in prices are the prominent features at the present time. Smelters, it is claimed, are well sold up on their output, and offer reservedly for forward delivery. The moderate demand is thus offset in a great measure. For prompt delivery 5.10¢ @ 5.15¢ is quoted on prime Western brands, and those that do not stand high in the esteem of consumers are quoted at 5.05¢ @ 5.10¢. The demand is momentarily rather slow.

Antimony.—Outside of the ordinary jobbing distribution there has been very little movement. Prices are still weak, but show no further radical change. Hallett's quoted at 12¢, LX at 12½¢, and Cookson's at 14¢ @ 14½¢, in wholesale quantities.

Tin Plate.—Importers have devoted nearly their entire attention to seeing that arrivals prior to July 1 were entered so as to escape the enhanced duty that went into effect on that date. Practically no effort has been made to work up trade. Buyers have kept a watchful eye upon the enormous importation, deferring their operations as far as possible pending developments. Some cheap parcels have been picked up, but the immediate outcome of the present situation is problematical. A great deal depends upon whether holders are in a position to carry the enormous supply until buyers are forced to come in. At times there have been accumulations on the docks here to the extent of 100,000 boxes. Private stores are crowded, and the stock here and at other points, it is estimated, is sufficient to supply a full average consumption and still leave a comfortable surplus. Nominal prices are as follows : Coke Tins—Penlan grade, IC, 14 x 20, $5.30 ; J. B. grade, do., $5.40 @ $5.42½; Bessemer do., $5.35 ; Siemens Steel, $5.50 @ $5.55. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.75 @ $5.80; Siemens Steel, IC basis, $5.90 @ $6; IX basis, $6.95 @ $7. IC Charcoals—Melyn grade, $6.30 @ $6.35; for each additional X add $1.50 ; Allaway grade, $5.90 @ $6 ; Grange grade, $6 @ $6.05 ; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.75 ; 20 x 28, $11.50 ; M. F., 14 x 20, $7.40 @ $7.50 ; do., 20 x 28, $15.25; Dean, 14 x 20, $5.15; do., 20 x 28, $10.15 @ $10.50; D. R. D. grade, 14 x 20, $4.85 ; do., 20 x 28, $9.85 @ $10; Mansel, 14 x 20, $5; do., 20 x 28, $9.90; Alyn, 14 x 20, $5.10; do., 20 x 28, $10; Dyffryn, 14 x 20, scarce; do., 20 x 28, $10.50. Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9.30; Abercarne grade, 14 x 20, $4.70; do., 20 x 28, $9.25.

New York Metal Exchange.

The following sales are reported :

THURSDAY, June 25.

10 tons Tin, July..... 20.45¢
10 tons Tin, September..... 20.50¢
25 tons Tin, June..... 20.50¢

FRIDAY, June 26.

10 tons Tin, November..... 20.45¢
25 tons Tin, July..... 20.35¢

MONDAY, June 29.

10 tons Tin, July..... 20.25¢
20 tons Tin, August..... 20.35¢

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, July 1, 1891.

The movement in prices of Pig Iron warrants has been moderate and operations of speculators were on a small scale throughout the week. Consumers buy Iron very sparingly, pending the results of the quarterly meetings, and the shipping demand is slow. Stocks of Scotch Iron in Connal's stores keep remarkably even, being 513,000 tons, against 514,000 tons a week ago, but the stock of Cleveland Iron has increased from 184,000 tons to 140,000 tons. There are now 72 Scotch furnaces in blast, an increase of three since last advice. Latest sales of warrants were at 47/ for Scotch, 41/6 for Cleveland and 51/6 for Hematite.

The market for Pig Tin has been quiet in the absence of orders from America. Tired small holders have liquidated to some extent, owing to uneasiness caused by the apathetic condition of the market, but the principal holders, relying upon the smallness of stocks, have done little.

Copper has also ruled a shade lower, owing to quiet speculative demand and realizations by small holders, together with sales of parcels in transit from Chili. This has encouraged aggressive action by the "bear" interest, although spot stocks continue to steadily decline.

The Tin Plate market is extremely quiet. There have been numerous inquiries for stock for August and September delivery, but these are looked upon as being mere feelers and sellers therefore declined to negotiate. Ordinary Bessemers, Coke finish, have been quoted at 13/ at Swansea. At this date 60 works have closed down with a view of reducing stocks and helping distribution in the United States. This throws about 25,000 men out of work. The period of cessation of work depends upon prospective orders, no definite time having been agreed upon.

There are no signs of improvement in the Steel trade. Orders have come in slowly and prices incline more or less in buyers' favor. Ship Plates are now freely offered at £6, f.o.b. at shipping port.

Scotch Pig Iron.—Business continues slow and prices remain stationary :

No. 1 Coltness,	f.o.b.	Glasgow	61/
No. 1 Summerlee,	"	"	59/
No. 1 Gartsherrie,	"	"	59/
No. 1 Langloan,	"	"	60/6
No. 1 Carnbroe,	"	"	49/6
No. 1 Shotts	"	at Leith	61/
No. 1 Glengarnock,	"	Ardrossan	59/
No. 1 Dalmellington,	"	"	53/
No. 1 Eglinton,	"	"	51/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—There is no change in prices; business continues light. Makers quote 41/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—The demand is moderate, but makers are firm on prices, asking 52/6 @ 53/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—A fair business is passing and prices remain steady. English 20 % quoted at 95/, f.o.b. shipping port.

Steel Rails.—No improvement in orders and no change in prices. Heavy sections quoted £4. 7/6, and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—The market remains very quiet and prices are normal. Makers ask £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Sales small and the demand still light. Bessemer, 2½ x 2½ inches, quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Very little doing and prices nominal. Bessemer quoted at £4. 10/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—There is little doing, and buyers and sellers are apart on prices. Tees quoted at £3. 17/6 @ £3, and Double Heads £3. 2/6 @ £3. 5/. f.o.b.

Scrap Iron.—Movement continues slow, but sellers hold firmly. Heavy Wrought quoted at £2. 10/, f.o.b.

Crop Ends.—Nothing doing and prices nominal. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

Tin Plate.—Market dull and prices still unsettled. We quote, f.o.b, Liverpool:

IC Charcoal, Alloway grade..	15/6 @ 15/9
IC Bessemer Steel, Coke finish....	14/ @ 14/3
IC Siemens " " "	14/3 @ 14/6
IC Coke, B. V. grade	13/6 @ ..
Charcoal Terne, Dean grade....	13/3 @ 13/6

Manufactured Iron.—The general demand still runs light, but prices remain steady. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	8	10	0
" Common "	6	10	0	@	6	12	6
Staff. Bl'k Sheet, singles...				@	7	2	6
Welsh Bars (f.o.b. Wales)...	5	12	6	@	5	15	0

Tin.—Market firmer at the close, with more demand. Straits quoted at £91. 17/6 @ £92, spot, and £91. 15/ for three months' futures.

Copper.—Demand only fair but prices steady. Merchant Bars quoted at £55, spot, and £55. 10/, three months' futures. Best Selected, £60. 10/.

Spelter.—Demand fair and market steady at £23. 15/ for ordinary Silesian.

Louisville.

LOUISVILLE, KY., June 27, 1891.

The situation in Iron circles has not materially changed from last week. The shutting down of mills and foundries for annual repairs and preparations for stock taking July 1 have a tendency to lend additional dullness to a market already very quiet. While it is generally conceded that business of all kinds will be good and the demand for iron large during the latter part of the year, buyers as a rule do not seem to think that there is sufficient prospect of a decided advance to require them to place orders for their full needs at existing prices for delivery during that period, and the majority of the trading is in small lots for immediate shipment.

We quote, for cash, f.o.b. cars Louisville, Ky.:

Southern Coke, No. 1 Foundry...	$14.50 @ $14.75
Southern Coke, No. 2 Foundry...	13.75 @ 14.25
Southern Coke, No. 3 Foundry..	13.25 @ 13.75
Southern Coke, Gray Forge.....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry	16.00 @ 17.00
Southern Car Wheel.....	19.00 @ 20.00

Cleveland.

(*By Telegraph.*)

Dealers announce an advance of about 35¢ ₱ ton in desirable Ores. The cheaper grades are about all cleared away, and business will be a little quiet until buyers ascertain to a certainty the amounts necessary to complete their stocks. The Lake Erie Iron Works and the Union Rolling Mill declined to-day to sign the new scale, and work is temporarily suspended.

HARDWARE.

Condition of Trade.

AS USUAL with the close of the first half of the year, trade is quiet, and merchants and manufacturers are generally giving their attention to closing up the six months business and making their plans for the remainder of the year. There is some difference in the reports as to the way in which the past season's business compares with that of last year. While it is generally referred to as having been somewhat disappointing, many concerns report that its aggregate compares favorably with that of a year ago. There have been few changes in price since last week and it is not thought by manufacturers that there will be any general revision of quotations. Prices on the whole are low and rather weak and in a number of lines the tendency during the past few months has been downward. In some lines of staple goods the market appears to be in a somewhat critical condition, apparently needing but little in the way of increased cost of raw materials and a quickened demand to cause a prompt response in the form of higher prices. In this condition of things careful buyers will do well to watch the market closely in order that opportunity for placing orders at the lowest obtainable quotations may not pass unimproved. The question as to the aggregate and extent of business in the fall is receiving general attention, and in this connection the reports given below from leading Hardware centers will be of especial interest, coming from parties whose views are entitled to weight.

Chicago.

(*By Telegraph.*)

Shelf Hardware jobbers report the usual stocking up for the summer season. The volume of business, however, is under that of the corresponding period of last year, but this is perhaps mainly, if not entirely, caused by the lower range of values for staple goods, which cut quite an important figure in jobbers' transactions. On this point advices from traveling men promise a somewhat booming trade in the fall after the crops have been gathered. Buyers, however, will not discount the future, but are very conservative this year and do not propose to load up with stocks of goods until they absolutely know just what the condition of the farming interests will be.

Tin Plate is firmer for the time being, but there is considerable apprehension felt over the large stocks known to be held by speculators, who bought in anticipation of a sharp rise immediately after the new tariff should go into effect. In Heavy Hardware some falling off in orders is noted among several of the leading houses, but others report a continued excellent trade.

St. Louis.

(*By Telegraph.*)

Jobbers report a fairly active trade, considering the warm weather of the past week. There is a movement of some size developing in Cut Nails, which points to higher prices in the near future. At the moment they are quoted at $1.80 to $1 85, according to quantity. Wire Nails are inactive at from $2 to $2.05. Barb Wire is slow to move at 1.70¢ to 1.75¢ for carload lots. Heavy Goods, Carriage and Wagon Stocks, and Wagon Builders' Tools of all kinds are in excellent demand. Prices are well maintained, but collections are very slow.

Cleveland.

THE W. BINGHAM COMPANY.—June closes the first half of the year with a result, to amount of sales, which is fully up to a year ago. The almost unprecented amount of rain which has fallen during the month has undoubtedly had its effect to diminish the amount of trade which otherwise might have been done, but jobbers on the whole have had little to complain of as to the volume of business. As the summer grows upon us we, of course, expect a decrease in trade. The vacation season is now here, and travelers, house salesmen and other employees who have been constantly at work since the winter holidays are now looking forward to their summer outing, and will come back to take hold of their work again with renewed energy. Everything indicates a good fall business, crops will be bountiful, prices are low, and stocks throughout the country are not large. While prices for the past six months have showed a decided weakness, there has not been (with the exception of Axes) any decline of any great moment, and this weakness has, in a measure, been offset by advances in some lines. Taking the staples of Nails and Wire in this market, as compared with last January, they are selling as follows :

	January.	Now.
Wire Nails	$2.20	$2.10
Cut Nails	1.75	1.70
Plain Wire (for No. 9)	2.20	2.25
Barbed Wire, Painted	2.70	2.80
" " Galvanized	3.20	3.30

The demand for Nails, even at these extremely low prices, is not large, but Wire is selling freely. The iron market has shown a decided improvement within the past two weeks, and we hope for its good effect all along the line. Collections have improved.

Baltimore.

CARLIN & FULTON.—Nothing has occurred since our last letter to take from the month of June its claim to being, perhaps, the dullest in the year. The local trade is very quiet, while in the agricultural sections the farmers are busy with their crops, and the entire country seems to be waiting for the cash returns from the harvests before business can be stimulated.

The season has been very favorable to nearly everything that the farmer has to sell, and the large crops of fruit and grain and grass cannot fail to have beneficial results in a very few weeks. It is, however, to be regretted that in the cotton States the low price of that staple prophesies dull trade and, perhaps, financial stringency.

Upon the whole, collections have been up to the average, and we do not think that there is much reason to compiain in this respect. Prices, as a general thing, are unchanged, though, possibly, after the semi-annual balance sheets of the manufacturers are drawn off, they may find it necessary to make advances rather than reductions.

New Orleans.

A. BALDWIN & CO.—Since our last report there is no special feature in the Hardware trade in this section that calls for extended notice. The demand for seasonable and Shelf Hardware shows somewhat of an improvement, and is about on a par with last season's business. The prospects for the coming crops has brightened somewhat, owing to considerable rain throughout the Southwest.

Philadelphia.

SUPPLEE HARDWARE COMPANY —It is a settled fact that the spring trade is now at an end, and quiet naturally prevails in trade circles. The salesmen who are on the road (which is very few at this writing) are occasionally sending in small orders, we think more from favoritism on the part of the customers than anything else, being just the season that farmers cannot leave their work, and consequently their purchases are for their immediate wants only.

The appearance of business houses presents a further dullness, owing to the many hands that are off on vacations and the small force left for what work there is be done.

The indications are that trade will remain quiet for the next two weeks. It is a noticeable fact that from July 1 to July 7 is the dullest time in the entire year in this market.

Business is confined principally to mail orders for the immediate demands of the customers.

Collections are slow and a general quiet temporarily prevails.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The wholesale trade of Omaha can be summed up in a very few words. "Good as could be expected at this season of the year." This is true, too, in the face of the unfavorable weather of the past week or more. Heavy and continuous rains have produced really a superabundance of moisture, and from a number of quarters we hear the refrain, "Too much

rain." At the present moment all interest centers in the weather, and a general interchange of climatic prognostications is heard on all sides. No considerable damage is reported up to date, but if the rainfall should continue to any extent the magnificent prospect for a big yield would be greatly diminished, if not destroyed. Collections are a little dull, but the wholesale trade are not raising any complaints on that score.

San Francisco.

HUNTINGTON-HOPKINS COMPANY.—We have now to report that trade is not up to the expected standard. In making comparisons generally with last year, we find that this year is behind for corresponding periods. This does not apply to Hardware business alone, but seems to be general in all lines. We are at a loss just at this moment how to account for this. We find that, on comparison, the trade of certain sections, particularly the Northwest country, which a year ago was quite active, has received a sort of set-back, and is now having an experience similar to what took place in the southern part of this State two years ago.

The outlook for fruit and grain crops still continues good. The money market is not in as good a condition as could be desired. We do not look for an improvement until a movement takes place in grain and fruit. The grain crop is now being harvested, and we look forward to the conclusion of the grain harvest within the next four or six weeks, at the expiration of which time, money will begin to move.

Portland, Ore.

FOSTER & ROBERTSON.—The rainy weather, which has continued almost without intermission for the last three or four weeks, has materially interfered with outdoor improvement, a large amount of which is under way in this city, and has a very depressing effect on the trade generally throughout the territory west of the Cascade Mauntains. The stagnation in the logging and lumber trade, due in a large measure to the disturbances in South America, still continues, and, if anything, is growing worse instead of better. This state of affairs is affecting, and must continue to materially affect business on Puget Sound, where every interest is directly dependent upon an active lumber market. The outlook for all other portions of our territory except Puget Sound is most excellent. The promise of a large crop has never been better, while the probability of a good price is much better than usual. This promising outlook has not so far been productive of any extravagant expenditure; on the contrary, there is in every direction a more than usual conservatism in the matter of buying, both on the part of the merchant and of his customers. One of the strongest evidences of this satisfactory and wise course is the fact that the greater portion of our business is coming through mail orders, thus indicating that the merchants are buying only as wants require, and are largely unaffected by the solicitations of the ever active traveler.

Notes on Prices.

Cut Nails.—During the past week there has been some inquiry for Cut Nails and the market has apparently been less sluggish than heretofore. The inquiries which resulted in the placing of some orders developed more of a willingness on the part of manufacturers to shade quotations slightly, but there has not been any quotable change in prices. Manufacturers, however, are not holding quite so firmly to former quotations, which continue on the basis of $1.55 at mill for carload lots with a 25 cent average. Ruling prices are regarded as very low and the opinion is expressed by many that the present is a safe time to place orders. There is, however, not much disposition to purchase beyond early requirements, as there has not been any special confidence in the strength of the market. The local demand for Nails is only fair. Small lots from store are held at $1.75 to $1.80.

Chicago, by Telegraph.—Steel Cut Nails have been in considerably better demand, with much larger sales than during the previous week, but prices are very low for factory lots. Surplus stocks have been unloaded in single carload lots at lower prices than mills would take for future delivery on large orders. The purchases cannot be repeated at the moment, as the quantity sold was limited, but regular quotations have, nevertheless, been reduced on account of the competition thus precipitated. Sales are now being made by manufacturers at $1.65, Chicago, on 30 cent average for delivery in July and August. Jobbers quote small lots at $1.75.

Wire Nails.—A somewhat better feeling prevails in the Wire Nail market, as compared with Cut Nails, owing to the slight advances in Rods. The extremely low prices which have been ruling and the fact that some of the mills are about to shut down for a time tends to strengthen the market somewhat, enabling manufacturers to withdraw some of their extreme quotations. There is, however, a general feeling that business will be heavy in the fall, and the manufacturers are apparently anticipating something of an advance in prices, and are accordingly pursuing a conservative policy with reference to orders for future delivery, refusing to accept them at prices which have recently been current. It is therefore necessary to make a slight advance in general quotations for carload lots at mill, which are now $2 to $2.05. Small lots from store are still held at $2.15 to $2.25.

Chicago, by Telegraph.—Wire nails have been in better demand here and manufacturers are encouraged to advance rates slightly, being aided also by the advancing cost of Wire Rods. The production of Rods promises to be considerably curtailed this month by the closing down of several of the largest mills for repairs, which are in some cases of an extensive character. A few makers still ask $2.05 Chicago, for factory lots, but others name $2.10 as their rate. Jobbers quote $2.15 to $2.20 from store for small lots.

Barb Wire.—The demand continues light, but the tone of the market on the whole is excellent. The slight irregularity in prices which prevails is to be traced almost entirely to the sale by jobbers of Wire purchased before the establishment of present prices, and the trade are to be congratulated that of this cutting there has been comparatively little, resulting in but a trifling demoralization of prices. The manufacturers, as a rule, have been enabled to clear their books of back orders, but are evidently not anxious to make contracts for future delivery at present prices, some of them anticipating that they will be able to get more money for Wire in the near future. In view of the condition of the Wire Rods market, and the excellent understanding which exists among the manufacturers, who are brought together in harmonious relations by the Columbia Patent Company, it is understood that there has been some conference with reference to an advance in prices, but of this no definite announcement is as yet made. In this condition of things the leading purchasers of Barb Wire are watching the market closely, so as to be in position to avail themselves of any advantages offered in the timely placing of orders. Quotations for small lots at the present time are on the basis of $3.50 for Four-Point Galvanized and $2.95 for Painted, but these prices are shaded in some cases.

Chicago, by Telegraph.—The demand is moderate, yet the mills in this vicinity are well fixed with orders and are not making prompt shipments. Prices are adjusted on a basis of $2.75 for painted, in small lots from jobbers, with 55¢ per hundred extra for galvanized, but a movement is on foot to advance rates and the impression gains ground that it will be successful, as the manufacturers have shown remarkable power in controlling the trade situation ever since they secured the ownership of the patents.

Glass.—The Window Glass season closes with this week, as all the fires have, as a rule, been put out. Stocks are reported low, and if such is the case Glass will probably be scarce before the factories are again started. It is understood that manufacturers will attempt a reduction of wages, which will be resisted by the operatives. A wage schedule has not been yet agreed upon, and may occasion a delay in starting the fires beyond the regular time, which is September 1. There is an impression among jobbers that some definite action will be taken by Glass manufacturers to revive the American Window Glass Company in the near future, and that it may be necessary to force some manufacturers who have thus far stood out to join hands in the enterprise. Prices are firm and unchanged at present, with indications of an advance and a probability that dealers will be obliged to depend upon foreign markets for Glass before fires are again started. Quotations are as follows: American Window Glass, for carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per

cent. discount; French Window Glass, 75 and 10 and 5 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

Axes.—The Axe market continues without specially new feature, prices being pretty regularly maintained. The prices of the American Axe and Tool Company are shaded somewhat by the outside manufacturers, but the aggregate of the production of outside concerns is not yet sufficiently important to affect the market materially. The R. Loveland Axe Company, Lamar, Clinton County, Pa., quote on a basis of $6.50 for their Loveland Excelsior Single Bit.

Padlocks.—The Padlock market presents no new features. The prices of the associated manufacturers are reported to be regularly maintained, and the tone of the market is good. Norwich Lock Mfg. Company, Norwich, Conn., and Brittan, Graham & Mathes, Pittsburgh, Pa., are, however, still using the old list, from which they make a discount of 70 per cent., with an extra 2 per cent. for cash in 30 days.

Binder Twine.—The expectations regarding higher prices for Binder Twine as the time for harvesting approached, have not thus far been realized. The market continues in an unsatisfactory and demoralized condition. There are a number of kinds of Twine on the market, made up of various mixtures of fibers, which does not improve the condition of affairs. Reports from the West indicate that Binder Twine is being sold at a wide range of prices. There are no quotations current on Jute Twine, as the price of sisal is so low. Market quotations in this city, in large quantities, are: Sisal, 7½ cents; Manila, 9 to 9½ cents per pound. Smaller quantities are sold at from ½ to 1 cent advance on these prices.

Mica.—Eugene Munsell & Co., 218 Water street, New York, issue a price-list of Mica. The only changes from the 1890 list occur in the assorted packages, where the prices and sizes are in some cases different. The following net prices on assorted packages of Selected Mica are given:

One-pound package, containing four sizes, ¼ pound each, 3 x 4¼, 5 x 6½, 2½ x 5, 3 x 3½.
North Carolina $3.30
Wyoming 2.75

Two-pound package, containing eight sizes, ¼ pound each, 2¾ x 6, 5 x 6½, 3 x 3, 4 x 5½, 2½ x 3½, 2½ x 4¼, 3¼ x 4¼ and 2¾ x 4¾.
North Carolina $5.55
Wyoming 4.75

Three-pound package, containing 12 sizes, ¼ pound each, 3¼ x 4¾, 3¼ x 4, 3 x 3¾, 3½ x 3½, 2½ x 4½, 2¾ x 4, 3 x 6, 2¾ x 2¾, 4½ x 5¼, 2½ x 3¾, 5 x 6 and 2½ x 4½.
North Carolina $7.75
Wyoming 6.50

Wagon Jack.—The E. Covert Mfg. Company, Farmer Village, N. Y., quote discount 40 per cent. on their Victor Wagon Jack.

Crescent Bench Hook.—The Crescent Bench Hook, manufactured by W. E. Lape, Syracuse, N. Y., for whom C. M. Hopkins is agent, 64 Reade street, New York, is quoted at $3 per dozen.

Covert Mfg. Company.—The following is the discount sheet, dated July, 1891, which has been issued by the Covert Mfg. Company, West Troy, N. Y. It will be observed that a number of changes are made in quotations, which are referred to as reducing the net price of their goods to a considerable extent. It will be borne in mind that an additional 2 per cent. is allowed for cash:

	Discount per cent.
Balling Irons	35
Boot, Interfering	35
Breast Chains.	
Short Snaps	50&10
Giant	50
New Patent	50
Bull Leads	35
Cattle Ties.	
Jute, Snap and Thimble	60&10
Jute, New Snap and Thimble	70&10
Jute, O. K.	70&10
Hemp	50
Chains.	
Back Cart	30
Breeching	35
Halter	60
Heel	50
Post	60&20
Rein	60&20
Stallion	35
Trace, long	35
Curry Comb and Sweat Scraper	35
End Irons, Cart Breech	35
Girth, Web	35
Halters.	
Hemp, Rope	50
Jute "	60, 10&10
" " 7-16	70
Web	35&5
" Adjustable	35&5
Rope, " Jute	40&10
" " Hemp	40
" " Sisal	40
" Grazing, Manila	35
" " Jute	35
Halter Leads.	
Hemp	50
Jute	60
" New Snap	75
" ⅝	60&20
" No. 132, with Ring	70&10
" No. 138, " "	70&10
Cotton	40&10
Hammock Ropes.	
Jute	60&20
Manila	60&20
Hitching Cords.	
Black, Braided	35
White, Cotton	35
Horse Ties.	
Jute, Snap and Thimble	60&10
" one " "	60&10
" New Snap and Thimble	70
" one " "	70
Hemp	50
" one Snap and Thimble	50
Jute, O. K.	70
Web	50
Cotton, Snap and Thimble	40&10
" one " "	40&10
Irons.	
End Cart Breech	35
Jack.	
Kinne Patent Jack	35
Lariat Tether.	
Manila	50&10
Jute	50&10
Picket Pins	50&10
Post, Hitching	35
Pant Stretcher	65
Reins.	
Driving Reins	40
Rod Post Hitcher	60&20
Snaps.	
Bull	35
Center Breast Chain	35
Double	50
Harness Loop, old Pattern	50&5
" " new "	50, 10&5
Lengthening, R. E., No. 38	50, 10&5
" Giant, R. E., No. 7	35
Martingale Loop	50
Open Eye, old pattern	50&10
" " new "	50, 10&5
" " Giant "	35
Round " old "	60, 10&10
" " new "	60, 10&5
" " Giant "	35
Swivel Loop	60
" " No. 50, R. E.	60, 10&5
" " " 40 "	60, 10&5
" " Heavy, " 1 inch	60
Snaps and Thimbles	60
" " " New	70&10
Soldering Coppers	30
" Irons	35
Stales—(See Halter Leads.)	
Strap Eyes	50
Sweat Scraper and Curry Comb	35
Safety Gate Hook	60&20
Thimbles	70
Weight Cord	35

Warranting Cutlery.

THE QUESTION as to the propriety of warranting Edge Tools has been discussed from time to time, and the agitation of the subject has made it plain that in connection with the system of warranting such goods a great many abuses have crept into the trade which subjected the manufacturers to much trouble and serious loss. On this account the effort is being made to do away with the system of warranting Tools, and so much success has attended the movement in this direction that it is much less general than a few years ago. The application of the same principle to another line of goods has recently been brought to our attention in a letter from a person prominently connected with the Cutlery trade, in which the point is made that many kinds of Cutlery are duly purchased, and then on account of some alleged defect in quality are returned, often for insufficient reason and after evident abuse. This matter is referred to by our correspondent as a serious annoyance and deserving the attention of manufacturers and jobbers. We take pleasure in submitting the letter we have received on this subject, and shall be glad to hear from others, in accordance with our correspondent's suggestion:

Having seen a communication of our friend from Kentucky in *The Iron Age* of April 9, in regard to the warranty of Edge Tools, we will say that we think his remarks could be extended to Cutlery.

The warranting of Cutlery is getting to be a serious question, and we agree with the writer that it would be better for all concerns if the warranting of goods was abandoned. In our experience with the trade we find that the party who buys a Knife, Razor, or numerous other articles from the retail merchant, will give the same the worst of abuse and then bring it back, expecting that he will get new goods in place of same without any question, and we think that if the party who returns the article should be informed that it must be submitted to the manufacturer or jobber for their opinion as to the merits of his claim that a great deal of trouble would be stopped. As the matter now stands the manufacturer or jobber is not supposed to have any right to question the justice of a claim, for if they do there is trouble right away, and we consider that a great many complaints made against cutting tools are caused by ignorance in the proper handling or sharpening of same.

We would like to hear from some of the manufacturers and jobbers as to their ideas to what extent goods should be warranted.

Retail Hardware and Stove Dealers' Association.

AT THE MEETING of the Retail Hardware and Stove Dealers' Association, held on the evening of June 23, an important letter was read from the secretary of the Grocers' Association. A letter was also read from a retail dealer in Minneapolis, in which he stated that the trade at that point had been canvassed, and desired information in detail regarding the New York and Brooklyn movement. The next meeting, at which important matters will be brought before the association, will be held at 8.30 p.m., July 8, at 213 East Twenty-third street, New York.

It Is Reported—

That Geo. Gray will open a new Hardware store at Alliance, Ohio.

That E. L. Corrin of the firm of Hughson & Corrin has purchased the interest of his partner in the Hardware business at Clyde, N. Y.

That Dennis Dean, dealer in Hardware, Superior, Wis., has disposed of his business to Robertson Bros.

That Charles Rugg, Southington, Conn., has removed his Hardware business to larger quarters in that place.

That F. K. Nance will be the proprietor of a new Hardware store at San Angelo, Texas.

That D. L. Riley & Son, recently of Spirit Lake, Iowa, have purchased the stock of Hardware, &c., of W. L. Hay & Son, Iowa Falls, Iowa.

That L. J. Cole succeeds R. Woods & Son, Hardware dealers at Sauk Center, Minn.

That Rudolph Heyse, Hardware dealer, Colorado Springs, Col., has removed to the quarters recently vacated by the Colorado Springs Furniture Company.

That Hay Bros. recently commenced the Hardware business at Iowa Falls, Iowa

That L. Ground has purchased his partner's interest in the firm of Ground & Mulkey, dealers in Agricultural Implements, Hardware, Stoves, &c., Monmouth, Ore., and will continue the business in his own name.

That J. H. Whitney, dealer in Hardware, Merill, Mich., has purchased property in the rear of his store and contemplates erecting a large brick establishment.

That A. Venske, Hardware dealer at Fall Creek, Wis , has sold out his business to Roessler & Son.

That J. A. Prince's Hardware store at Schuyler, Neb., was robbed of $50 worth of Knives and Revolvers recently.

That C. J. Crissman will continue the Hardware business at Alpena, Mich., which was formerly conducted by himself and Frank D. Crissman in partnership.

That Ritterskamp & Co., will open a Hardware and Tinware store in Vincennes, Ind.

That Jacob Snyder will open a Hardware store at Remus, Mich., in a few weeks.

That W. H. Boynton will open a new Hardware store at Hampton, Va.

That Nelson & Boswell, Hardware dealers at Benson, Minn., have disposed of their business to Nelson Bros.

That T. D. Potter & Co., wholesale dealers in Hardware and Lumber, Bondsville, Mass., were robbed on the 20th inst. The burglary, though daring and successfully executed, was not remunerative, $40 in cash only being taken.

American Hardware in Great Britain.

WE PRINT BELOW a letter just received from Polhemus Lyon, our special foreign representative, who has been spending a few weeks in Great Britain and gives the results of his observations. His communication will be read with especial interest, as it touches also upon the general question of export business in its general aspects and the policy of Great Britain with reference to their foreign trade :

After spending three weeks in the United Kingdom, I prove, what is generally believed at home, that the demand here for American Hardware is very limited, both as regards the assortment and the quantity. Several of the large importers here claim that they are not doing so well with American goods for home consumption as a few years back. Our finer Tools, however, hold their own, especially the higher priced small Tools for machinists' use, and a fair proportion of the novelties sent over make a success here.

An American salesman abroad constantly meets the inquiry: "Have you any novelties?" or, "What have you that we can take hold of and obtain the control? Competition in our small country is too sharp for us to handle just what our neighbors do." This has been fostered, no doubt, by the habit so many manufacturers have adopted of making exclusive agents in foreign lands; not always proving it a success.

Both in Dublin and Glasgow there are two or three concerns who import many thousands of dollars worth of American Hardware and Agricultural Implements, but they do not draw the line so closely as we do, and are good buyers of Brooms and Woodenware as well. But even in these cities I found a preference to purchase through London commission houses, who make a price laid down at buyer's door. The question of laid down cost on a quotation in American currency, f.o.b. New York, is one that the buyer here does not care to grapple with. And certainly if a manufacturer can accomplish the same end through a New York and London commission house, he does not want to do business direct.

It is very evident that the 38,000,000 in in this kingdom have a power of consumption vastly inferior, per capita, to that of our own countries or the colonies. In Glasgow and London is seen very frequently the sign "Wholesale and for Export," and the remark is constantly made, "Our domestic trade is insignificant; it is the export trade on which we live." I saw a sign in this city, "Gentlemen's left-off clothing at wholesale for export." This enlightens me as to some curious combinations of would-be European dress which I saw in Yokohama 18 months ago.

What a disappointment London is to a traveler in search of buyers at wholesale of American Hardware. Glasgow offers greater inducements. The well-known New York commission houses in London hold the trade very well, selling chiefly at a fixed sterling price, laid down, which includes their margin. I think many English manufacturers have of late set aside their traditions in favor of competing with American makers in goods made after American styles. The Lawn Mower people are endeavoring to divert trade from our well-known makers, by sending their goods on sale freely throughout the Kingdom, to be settled for July 1, by return or 60 days' acceptance.

In a visit to a large manufacturer this week, I was interested in the remark, "Your friends, the Stanley Rule people, must be content with a dividend of less than 5 per cent., for we cannot meet their prices in the colonies." To an American in search of export business, such an utterance is hailed with delight. This man qualified his remark by adding, "Of course our reputation for quality gives us most of the business," and I let him take what comfort he could out of that without endeavoring to enlighten him from my personal knowledge.

I do not doubt we are having an ever-increasing product that will successfully compete with English manufactures on colonial territory. Their cost of manufacturing has materially increased within three years, coal is 40 per cent. dearer, &c., &c.

The Imperial Federation League is an association of gentlemen interested in centralizing the great British Empire. Many Englishmen of repute are members. The United Empire Trade League is a large body of influential men, both in and out of Parliament, with a somewhat similar aim.

The increased barrier raised in the United States against some products of Great Britain, the advantages accruing to America through Mr. Blaine's reciprocity scheme, the temptation this offers to Canada, the possible federation of Australia under a protective tariff, have all served to awaken these two leagues into renewed activity.

During June both of these bodies have waited upon the Marquis of Salisbury, the first urging that the self-governing colonies be invited to a conference to consider the question of participation in the general government and an imperial tariff. Lord Salisbury expressed great interest in the matter, but as a practical statesman he felt the present moment was hardly favorable to promote the accomplishment of so laudable an object, referring to the Canadian crisis following the death of Sir John MacDonald, and the Australian Colonies in the throes of local federation pro and con.

The second organization gave as their object : To free the mother country from

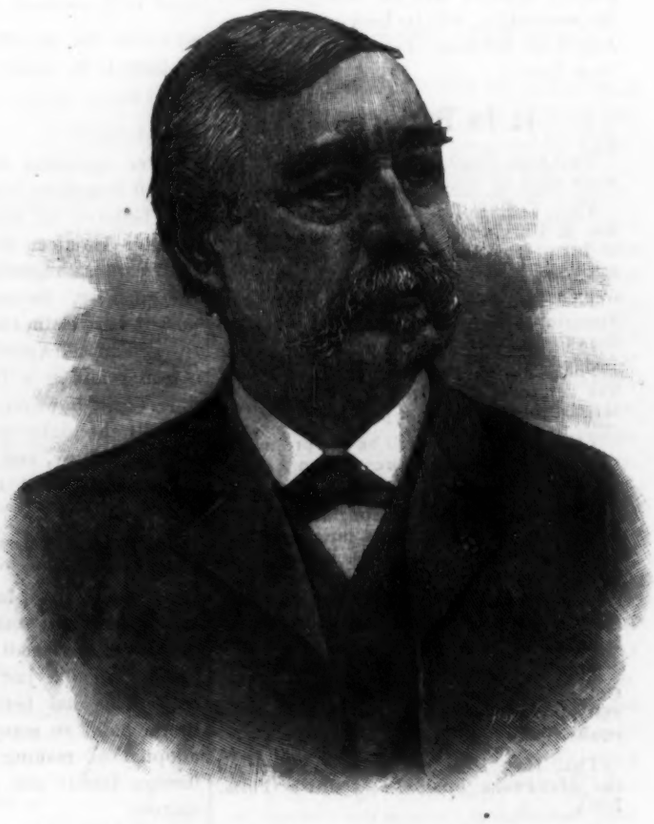
the treaties with foreign powers which prevent the colonies from giving any preference to British trade, and desired an imperial conference summoned to consider the most practicable plan whereby the various portions of the British Dominion can be brought into closer commercial union. Lord Salisbury thought the deputation of sufficient importance to invite the officials of the Colonial Office and of the Government Board of Trade to be present. He spoke of the treaties above referred to as unlucky and unfortunate pledges, adding, "We shall be glad indeed to take every opportunity that arises for delivering ourselves from this unfortunate pledge" and counseled this deputation to state to the country at large the policy they propose, and to spare no opportunity of impressing their principles upon their fellow men (which was received with cheers). These matters must be thrashed out and argued out before the country. Public opinion must be formed before the Government can act." So says Lord Salisbury.

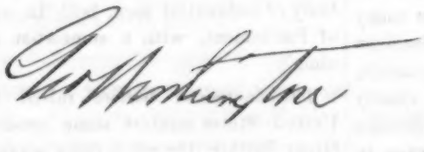
One realizes, in a visit among thoughtful Englishmen, how seriously these matters are felt, and that the devotion of Great Britain to a theory has about reached its limit.

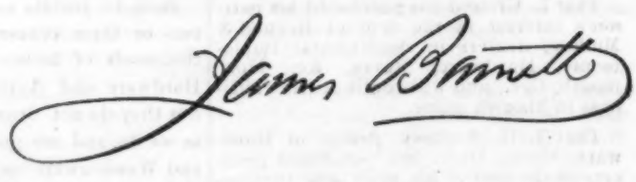
PRATT & LETCHWORTH, Buffalo, N. Y., give illustrations of Buffalo Toys on their monthly calendar for July.

The Geo. Worthington Co.

THE GEO. WORTHINGTON COMPANY, Cleveland, Ohio, have just issued an imposing catalogue of 1612 pages, conveniently arranged, bound in cloth and leather. It contains over 7000 illustrations, together with list prices and descriptions of the goods, and takes its place among the most complete and best arranged Hardware catalogues. The first pages are devoted to pictures of George Worthington, the founder of the business, and of Gen. James Barnett, the president of the company. These pictures are followed by a perspective view of their establishment, 95–99 St. Clair street, which has a floor space of over 100,000 square feet. The index occupies a position in the front of the book, in which distinctness, and convenience of arrangement are noticeable features. The first 588 pages of the catalogue are devoted to Mechanical Tools, Mill, Quarry and Railroad Supplies, Pipe Fittings, Brass Goods, Engines, Boilers, Steam Pumps, Shafting, Hangers, &c. A special edition of this portion has been bound separately, which is especially intended for distribution among manufacturers. Pages 589 to 924 illustrate their stock of Builders' and Shelf Hardware; pages 925 to 996, Farm Implements, Agricultural Tools, Pumps, &c.; 997 to 1154, House-Furnishing Goods, Kitchen Tools and miscellaneous Hardware; 1155 to 1250, Cutlery, of which a fine line is shown. From 1251 to 1356 they illustrate Guns, Revolvers and Sporting Goods and Fishing Tackle; 1357 to 1498, Store Trimmings, Hollow and Agate Ware, Tinware, Tinner's Tools and Machines; 1499 to 1564. Carriage and Blacksmith's Hardware. From 1565 to 1612 is shown a line of Saddlery Hardware, such as is usually carried by the Hardware trade. The company also have in press a catalogue illustrating their line of Saddlery Hardware, consisting of 275 pages, which will be very complete.







It is interesting to notice in this connection that this firm is one of the pioneer Hardware houses of the West, Mr. Worthington having founded the business in 1829. At this early date Mr. Worthington found occasion, at times, to make small trips in the interest of his business, and his was not an unfamiliar figure, as he traveled through the country on horseback, carrying his samples in his saddle bags. The accompanying portrait will be appreciated by many who knew him, and be the still larger number who are familiar with his name as perpetuated in his house. The rapid increase in the volume of this company's business has necessitated several removals to accommodate their growing trade. In 1874 their large establishment was totally destroyed by fire. They immediately rebuilt and en-

larged their store, but finding themselves again cramped for room, removed in 1885 to their present commodious building, which they designed and built especially for their business. We are advised that they already find this building too small to accommodate their large business, which extends from the Atlantic to the Pacific coasts, and as far south as Texas. Mr. Worthington continued at the head of the business until his death in 1872. In 1887 the business was incorporated as the Geo. Worthington Company, with Gen. James Barnett, whose portrait is herewith given, as president, Geo. Deming, vice-president, and James Storer, secretary and treasurer.

Trade Items.

MAURICE E. VIELE, Albany, N. Y., who is so widely and favorably known to the trade, in a circular dated June 25 announces that the business carried on since November 30, 1845, under the various firm names of Davidson & Viele, Viele & Clark, Viele, Coles & Woodruff and Maurice E Viele, has been transferred to the Albany Hardware and Iron Company, together with all merchandise, fixtures and good-will. Mr. Viele commends his successors to all the many friends and customers which he has secured during his long experience of 46 years of active and continued business. In the same circular the Albany Hardware and Iron Company, who were incorporated June 17, solicit a continuance of the favors so generously bestowed on their predecessor, which they will endeavor to merit by close and prompt attention to the wants of the trade. The members of the company include Charles H. Turner, Wm. B. Wackerhagen, James O. Hovey, Wm. I. Baker and Wm. H. Flanagan, who were *attachés* of the former house of Maurice E. Viele, and also Daniel S. Benton, formerly with Corning & Co. and Ward & Byrne. The officers of the company are Charles H. Turner, president; W. B. Wackerhagen, secretary, and James K. Dunscomb, treasurer. The business will be conducted in the premises formerly occupied by Mr. Viele, which have been continuously employed as a Hardware stand since the year 1797. The announcement of the company will be observed on another page, in which they solicit quotations for Hardware and kindred goods, Nails, Bar and Sheet Iron and other Metals

THE OLIVER & ROBERTS WIRE COMPANY of Pittsburgh have distributed to the Northwestern trade through Nelson B. Williams, their Chicago agent, a very handsome paper weight, which is much more useful and acceptable than the conventional souvenir. It is a Seth Thomas clock inclosed in a heavy nickel-plated case of circular form. The company's name is printed on the face of the clock, while the figures denoting the hours are inclosed by a circle of Barb Wire, which is very appropriate in this connection.

C. B. JUDD, vice-president and secretary of the Bissell Carpet Sweeper Company, Grand Rapids, Mich, has just returned from Europe. While there he closed the company's English agency and opened a branch house at 47 Wilson street, Finsbury Square, London, having acquired by purchase from Franklin Hallet & Co. the entire Carpet Sweeper business which they have heretofore conducted, and James L. Pollitt will hereafter be their London manager. We are advised also that they have opened spacious salesrooms at the above address, where they will carry at all times a large stock of the main brands of the well known Bissell Carpet Sweepers. The company, having a four-story building, are in a position to meet satisfactorily the requirements of the trade.

WM. MCKENZIE of Thos. McKenzie & Sons, Limited, at Dublin, is spending July in this country, chiefly to visit his estate of some 5000 acres of village and farm land in Minnesota.

CHAS. CHURCHILL & CO., Limited, of London, have now a branch house in Birmingham. They are rapidly recovering their former prestige, but are devoting their attention more exclusively to American Machinery and Machinists' Tools, doing business chiefly with manufacturers rather than ironmongers. The well-known houses of Markt & Co., John G. Rollins, Lotz, Abbott & Co. also continue the even tenor of their way, pushing the interests of American makers with considerable success.

THE TRADE WILL observe the advertisement of Slaymaker, Barry & Co., Lancaster, Pa., for whom John H. Graham & Co. are agents, 113 Chambers street, New York. Attention is called, it will be observed, to their Spring Self-Locking Scandinavian Padlocks and their new No. 427 Solid Bronze Metal Padlock.

MCINTOSH-HUNTINGTON COMPANY, Cleveland, Ohio, announce that all the Cleveland Hardware jobbers will suspend business from the evening of July 3 to morning of July 6, and suggest that 4th of July supplies be ordered in good season.

AMERICAN BIT BRACE COMPANY, Buffalo, N. Y., in their advertisement in another part of this issue call attention to the fact that they are manufacturers of Bit Braces of all grades and styles, and indicate that their catalogue will be furnished upon application.

THE PETERS PUMP COMPANY of Kewanee, Ill., manufacturers of Pumps and Windmills, have recently added several improvements to their Pumps. They are made with a double cylinder, but the cylinders do not move, as in most Pumps of the kind. The Pump rods come down around the cylinders and entering from below the valves are moved up and down, the cylinders remaining stationary. It is claimed that this plan gives it many advantages over the other Pumps. They are described as made in the most substantial manner, the cylinders and valve seats being of brass, and the other parts of the Pump being made of the best material.

GLOBE FILE AND HARDWARE COMPANY, St. Louis, Mo., who were recently incorporated, are successors to Niekamp & Baker, File makers and dealers in General Hardware, whose factory has been known as the Globe File Works since 1877. Mr. Baber, our readers will regret to learn, is at present, we are advised, seriously ill.

E. T. BARNUM, Detroit, Mich., is manufacturing Wrought-Iron Window Guards and artistic Grills in a large variety of designs, and is adding to their utility by backing them up with wire netting. In this form they not only serve the purpose of ornamental protection against thieves, but also exclude flies and other objectionable insects.

Price-Lists, Circulars, &c.

THE SHELTON COMPANY, Birmingham, Conn.: Cabinet Bed Screws, American Bed Screws and Patent Cabinet Bed Screws. The latter is referred to as a Screw that can be adjusted by an ordinary bed screw key, a screw driver, a pin wrench, or by a piece of wire of not greater diameter than the drilled holes in the head. They are specially adapted for general cabinet use.

IWAN BROTHERS, Streator, Ill.: Drain and Mine Tools, Post-Hole Augers, Revolving Chimney Tops, Bush Hooks, &c. They show their complete line of Miners' Tools, of which they make a specialty. In this connection they state that they are practical mechanics, and employ none but experienced workmen, and use only the best material in their Tools. They refer to their Coal Picks and Sledges as hand made.

FRIEDENWALD BROS., Baltimore, Md.: Triumph Automatic Cellar Drainer. This consists of a metallic box, the top of which is set level with the cellar floor, and is operated with either steam or water pressure. It is claimed that the Drainer is automatic, and that it will operate where the sewer is higher than the cellar, so that the refuse water must be elevated. Their illustrated catalogue shows the practical working of the Drainer in various positions. The catalogue will be mailed by the above firm upon application.

CARTER-MAGILL HARDWARE COMPANY, Chattanooga, Tenn., Wholesale Hardware: Issue an illustrated catalogue of 160 pages, relating to the line of goods carried by them. An effort has been made, both by cuts and descriptions, to give a clear idea of the most salable standard goods and sizes in each department The book is intended for permanent reference, and designed to assist merchants in selecting goods for purchase.

JOHN M. WADDEL MFG. COMPANY, Greenfield, Ohio: The Simplex Cash Register. The manufacturers claim that it will plainly and conspicuously indicate every sale, indicate the last sale made till the next follows, register all sales made during the day or days, show at a glance the total amount of sales made in each denomination of money, indicate by ticket all money received on account, or paid out for expenses, and register each ticket.

RUSSELL & ERWIN MFG. COMPANY, New York, and New Britain, Conn.: Revised price-list of Padlocks and Padlock Keys, under date of June 10. The list covers Padlocks, American Small Padlocks, Padlocks in Sets with Master Key, Iron and Bronze Metal Padlocks, Cast Brass Padlocks, Scandinavian or Jail Padlocks and Padlock Keys.

Exports.

PER BARK CARRIE WINSLOW, JUNE 13, 1891, FOR SYDNEY, N. S. W.

By H. W. Peabody & Co.—4 cases Plated Ware, 3 packages Hardware, 1120 pounds Nails, 1 case Rivets, 6 cases Nails, 6 dozen Churns, 7 cases Hardware, 4 cases Lamp Ware.

By J. L. Mott Iron Works.—16 packages Stoves.

By W. & B. Douglas.—6 packages Pumps.

By Meriden Britannia Company.—9 boxes Silver Plated Ware.

By the F. B. Wheeler Company.—13 cases Refrigerators, 3 packages Hardware.

By W. K. Freeman.—4 packages Hardware.

By Ilsley, Doubleday & Co.—4 dozen Brushes, 3 dozen Lamp Goods, 6 packages Hardware, 3000 Metallic Cartridges.

By Strong & Trowbridge.—8 Tire Upsetters, 6 dozen Axes, 126 pounds Whetstones, 1 dozen Emery Wheels, 20 pounds Hardware, 12 Wringers, 7 dozen Axes and Hatchets, 5 dozen Hardware, 220 pounds Hardware, 5 dozen Locks, 3 dozen Rakes, 9 cases Axles, 2 cases Bolts, 1 case Rules and Squares.

By McLean Bros. & Rigg.—24 dozen Mouse Traps, 1 dozen Wringers, 9 dozen Wrenches, 18 dozen Hammers, 6 dozen Fly Traps, 7 dozen Braces, 6 dozen Hay Forks, 3 gross Rat Traps, 11 dozen Braces, 1 case Wire Goods, 2 boxes Axes, 1 box Rifles, 1 case Oil Cans, 1 case Drills, 1 case Lawn Mowers, 1 case Shears, 1 barrel Hoes, 1 case Hardware.

By Meriden Britannia Company.—15 boxes Plated Ware.

By Coombs, Crosby & Eddy.—7 cases Meat Choppers, 3 dozen Wringers.

By A. S. Lascelles & Co.—33 cases Axes, 11 cases Hardware, 12 cases Tinware, 3 cases Hardware.

By William E. Peck.—25 packages Lampware.

By E. W. Forbes & Son.—2 dozen Wringers.

By H. W. Peabody & Co.—1½ dozen Churns, 60,000 Primers, 2 cases Hardware, 10 tons Barb Wire, 2 cases Hardware, 20 tons Barb Wire.

By R. W. Cameron & Co.—2 barrels Belting.
By W. H. Crossman & Bro.—5 cases Bush Hooks, 11 dozen Locks, 48 dozen Hardware, 1 gross Traps, 4 dozen Picks, 1 case Soldering Irons, 6 scales, 6 dozen Wrenches, 1 dozen Braces, 6 cases Hardware, 146 pounds Cages, 2 cases Traps, 1 case Lamp Goods, 6 dozen Soldering Irons, 40 dozen Axes, 1 gross Traps, 6 dozen Lemon Squeezers, 2 gross Traps, 4 cases Hardware, 18 dozen Hammers, 16 dozen Picks, 13 dozen Braces, 1 dozen Plow Parts, 10,000 Metallic Cartridges, 1 box Hardware, 31 cases Iron Bolts, 56 dozen Transom Lifters, 3 dozen Tills, 1 barrel Plated Ware, 1 dozen Blowers, 9 cases Hardware, 1 case Traps, 3 dozen Lawn Mowers, 1500 feet Hose, 1 Tire Bender, 11 cases Carriage Hardware, 1 case Brushes and Hardware, 2 cases Plated Ware, 14 Scale Beams, 6 dozen Wringers, 4 dozen Lemon Squeezers, 6 dozen Razor Strops, 1 dozen Rifles, 12,000 Cartridges, 6 Meat Cutters, 1½ dozen Sad Irons, 1 case Agricultural Implements, 4 cases Hardware, 400 reels Barb Wire.

PER STEAMSHIP STRATHDON, JUNE 19, 1891,

FOR SYDNEY, N. S. W.

By R. W. Cameron & Co.—25 Hatchets, 3 cases Hardware.
By Healy & Earl.—4 cases Drills, 2 packages Rubber Hose, 1 case Leather Belting, 2 cases Sandpaper, 1 box Belt Studs, 1 box Drills, 1 box Leather Belting, 1 case Hardware, 10 dozen Copper Rivets.
By R. H. Dana & Co.—9 cases Lanterns, 2 barrels Silver Ware.
By Henry W. Peabody & Co.—10 barrels Wire, 1 case Brushes, 33 boxes Nails, 4 cases Builders' Hardware, 1 case Rat Traps, 1 case Bird Cages, 10 tons Barb Wire, 2 cases Hardware.
By E. W. Harrison.—4 cases Pumps, 1 barrel Drills, 3 packages Pipe Fittings, 7 packages Saws, 4 packages Blowers and Forges.
By Meriden Britannia Company.—11 packages Silver Plated Ware.
By R. W. Forbes & Son.—2 coils Rope.
By Ilsley, Doubleday & Co.—¼ gross Air Rifles, 3 cases Hardware, 3 cases Wire Goods.
By Edward Miller & Co.—18 packages Lamp Goods.
By Meriden Britannia Company.—2 boxes Silver Plated Ware.
By Rogers, Smith & Co.—3 boxes Silver Plated Ware.
By Reed & Barton.—1 cask Silver Plated Ware.
By Strong & Trowbridge.—1 case Hardware, 1 case Freezers.

FOR MELBOURNE.

By Reed & Barton.—15 packages and 16 casks Plated Ware.
By Strong & Trowbridge.—28 kegs Nails, 10 cases Hardware, 3 cases Bolts, 1 case Hammers, 7 cases Tacks, 3 cases Carbines, 2 cases Stone, 2 crates Stone.

FOR AUCKLAND.

By Parker, Stearns & Sutton.—1 case Rubber Goods.

FOR ADELAIDE.

By Mailler & Quereau.—21 dozen Carriage Hardware, 5½ dozen Harrow Parts.

FOR MELBOURNE.

By Russell & Erwin Mfg. Company.—10 cases Hardware.
By J. A. Roebling & Sons Company.—33,576 pounds Wire Rope.

FOR SYDNEY.

By C. B. Seabury.—1 box Hardware.
By Crane & McMahon.—1 Refrigerator, 1 trunk and 26 cases Hardware.
By Neuss, Hesslein & Co.—4 dozen Pick Axes, 4 dozen Handles.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Distinctively new features in this branch of trade are exceedingly few and far between. The further reduction in the price of Linseed Oil prompts buyers to inquire more anxiously as to the prospects for the future of the market for various Paints into the composition of which the Oil is a prominent factor. Not only that but there is a modest sort of demand that manufacturers should grant some allowance on stock held by their customers, besides making a lower basis of value for current purchases. In some instances manufacturers' lists or discounts have been revised, but most concerns adhere to former rates, claiming that their prices have been based on average cost of Oil, much below that which is on record for the past six months, and that they would strike merely a fair average, should present cost of Oil be no lower during the balance of the year than it is at the present time. The leading pigments are affected very little, if at all. In White Lead and kindred products the cost of base material continues comparatively high, offsetting cheaper Oil, in a measure. Zincs, too, remain very firm, and the several commodities that are used extensively in various mixtures of the cheaper class cost quite as much as they did 60 days ago. These facts have some weight, and, in connection with the fairly liberal distribution of manufactured goods generally, rob the lower Oil prices of some of their significance.

White Lead.—Jobbers have moved off a very fair quantity of pure pigment, and report a full average movement in some of the cheaper varieties also. Corroders state that their deliveries keep fully up to the average, and while here and there complaint is made by manufacturers of mixed Leads that sales do not afford entire satisfaction, the general movement is evidently well up to the average. Prices show some irregularity, more particularly where small lots from second hands are involved, indicating that distributors are inclined to the belief that a general modification of prices by manufacturers is not wholly improbable.

Zincs.—Deliveries of American Oxide by manufacturers continue on a liberal scale, and the output of the leading producers is closely taken up. New orders are chiefly of routine character, and merely fair in the aggregate amount, yet sufficient to keep the market in strong position. Prices remain the same as quoted for some little time past. The importation of foreign brands seems to be gauged in a good measure by the outlet, and prices are firmly held in the absence of any change in foreign market values.

Colors.—The market for Dry Colors is without striking change. Purchases of grienders' stock are moderate, as not uncommon at this season of the year, but there is fully the average distribution of house-painters' specialties, and prices, with few exceptions, remain very steady. Paris Green finds slow movement in the absence of insect ravages on a large scale, and prices for the insecticide are slightly irregular in some quarters.

Miscellaneous.—The market for Block Chalk has been quiet, and prices have undergone no radical change. In Whiting there is still more or less irregularity, as also in Putty, the result of continued competition between local and out of town manufacturers. Paris White holds fairly steady. In Barytes, Terra Alba, China Clay and Talc there has been no change.

Oils and Turpentine.

The features of the market for Animal and Vegetable Oils have a close similarity to those noted last week. Another decline in the price of Linseed Oil has taken place and the contest between combine and independent crushers continues keen. In other lines the movement of prices has been within narrow bounds and nothing has occurred that would tend to stimulate action on the part of buyers or cause anxiety among sellers. Briefly, normal conditions prevail nearly all along the line, and new developments of a pronounced character would appear absolutely necessary to bring about any radical changes in the near future.

Linseed Oil.—City crushers have reduced their price for Raw Oil manufactured from domestic seed to 47¢ ₱ gallon and the Boiled Oil to 50¢. This break was to meet cuts made by "outside" Western crushers, who had been selling at 47¢ and under previous to the decline. The combine interest in the West have dropped their price to 45¢. At the present time there are no signs of cessation of hostilities. To the contrary, several crushers are taking orders at the present prices and guaranteeing their customers protection in the event of any further decline. Low cost serves to stimulate buying in some degree, but jobbers and consumers operate carefully, and are likely to continue so doing until the outlook is more clearly defined.

Cotton-Seed Oil.—Crude product is receiving very little attention at the moment. Refiners hold aloof in view of the near approach of the new season and the slowness of the market for their product. The refined Oils are taken to a fair extent in small quantities, chiefly at about former prices, but large consumers appear to be well supplied and the export outlet continues narrow. Prime Summer Yellow brought 37¢ @ 37½¢ and slightly reddish stock 33¢ @ 34¢. For butter quality 42¢ @ 43¢ are the ruling figures.

Lard Oil.—The best brands of prime city are now offered at 52¢, and Western can be had at 50¢ @ 51¢, as to size of order. The movement at present is rather slow, the demand tame and the offering quite free. Low grades are weaker also, at 42½¢, 45¢ for extra No. 1 and 37½¢ @ 40¢ for No. 1, as to size of lot.

Menhaden Oil.—The reports from the fishing indicate that the catch thus far has been moderate, and it is buyers' experience that neither the combined manufacturers nor outsiders offer Oil freely. However, some few parcels have been picked up at 26¢ @ 27¢, which prices fairly reflect market value at the present time. No changes have been made in prices of the Pressed or Bleached Oils by manufacturers.

Miscellaneous.—No changes have taken place in the market for Sperm or Whale Oils. Olive Oil is a shade firmer, although moving rather slowly. Palm Oil is steady, but quiet. Cocoanut Oils are stronger. The spot supply is now concentrated in few hands, and supplies afloat are also well under control. On actual sales no advance has yet been established.

Spirits Turpentine.—Prices have ruled a shade lower in this market. Sales have been made at 37½¢ @ 38¢, as to style of package, and those prices would be accepted at this writing for wholesale quantities.

The Chicago World's Fair Corporation have furnished the following estimate of the cost of the ten new buildings to be erected:

	Acres.	Estimated Cost.
Manufacturing	31.2	$1,000,000
Electricity	5.6	300,000
Mines and Mining	5.6	250,000
Agriculture	9.2	
Dairy	1.7	1,000,000
Forestry	4.5	
Machinery	9.7	
Machinery Annex	8.7	1,000,000
Annex for power	8.3	
Horticulture	5.7	450,000
Women's Building	2	200,000
Transportation	9.3	450,000
Depots	...	
Administration	1.4	550,000
Fine Arts	0.3	600,000
Total	95.2	$5,800,000

It appears from this authoritative estimate made within a week that the estimated cost of the buildings which Chicago is to erect is now $5,800,000. The contracts for five of these buildings have been let and they show that over a million has been saved already, compared with the $12,000,000 estimate originally made.

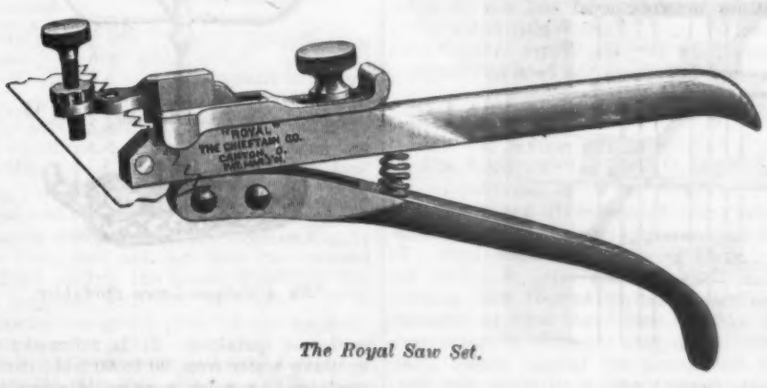
The McNeil Rolling Mill Barrow.

This is a steel wheelbarrow made unusually strong and intended especially for works having hot material like slag to handle. It is made by Grant McNeil of Akron, Ohio. The chief characteristics of this barrow are to be found in the materials and method of construction. The handles are made of steel pipe instead of iron gas pipe, as is usual, and as they are not weakened by bolt holes, the tray being attached by heavy forged clamps, they are of great strength and well adapted to withstand rough usage. The tray is made of one piece of steel, and is provided with a heavy band around the top. In the rolling mill barrow the tray is made of No. 10 or No. 7 W. G. plates, the latter being fully $\frac{3}{16}$ inch thick. The legs and other braces are all of proportionate size, and the foot of each leg is shod with a heavy iron shoe which is easily renewed. The wheel is 18 inches in diameter, and is very strong and heavy. This barrow is made in three sizes, viz.: 3, 4 and 5 cubic feet. The nose of the tray in the 3 cubic feet size is unusually long, to make it light in the hands, but if desired a tray of the shape used in other sizes is put on. The handles are longer than common, but are shaped to permit the wheeler to get close to the load if he wishes. These barrows have been in use over a year and have given great satisfaction.

The McNeil Rolling Mill Barrow.

The Royal Saw Set.

Chieftain Hay Rake Company, Canton, Ohio, are introducing a saw set, as illustrated herewith. It is described as having the anvil, which is a hardened piece of saw steel, inserted in the under handle and firmly riveted to its seat, and as extremely simple, none of the parts being liable to break. It is claimed that the bed plate, or anvil, and die bar are so arranged as to give the operator full view of the saw teeth while being set; that the pressure is easy and directly downward on the teeth without bending or twisting the set or saw blade, and that it acts as a positive set without liability of kinking the blade or breaking the teeth. It is designed for use on either hand or band saws.



The Royal Saw Set.

The New Reliable Plumbers' and Tinners' Furnace.

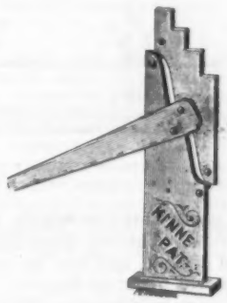
J. R. Baker & Son, Kendallville, Ind., are introducing a furnace, as illustrated herewith. The body, except the bottom, is one piece of spun steel, combining strength and durability. The air pressure is referred to as automatic and as producing a powerful flame. The top chamber can be removed, enabling one to use the direct flame for heating pipes, or burning off paint, and in this condition makes a light portable picnic and camping cooker. It is recommended for use in houses, on metal roofs, and in tinners' and plumbers' shops. The manufacturers claim that it melts a pot of lead quickly, that it is easily lighted and quickly extinguished, that leaks are impossible, that it will stand rough usage, and that it will carry enough gasoline in the tank for a day's work.

The New Reliable Plumbers' and Tinners' Furnace.

Wiggins' last great discovery is that wire fences and telephones cause droughts. He should include steel rails.

The Kinne Wagon Jack.

Covert Mfg. Company, West Troy, N. Y., are introducing a wagon jack, as illustrated herewith. As a wood jack, it is referred to as combining lightness, strength and practibility. The moderate pirce at which it is sold is also alluded to as being in its favor.



The Kinne Wagon Jack.

Excelsior Horse Shoe Company, 13 Blackstone street, Worcester, Mass., are intending to put on the market a new horse shoe. At the toe of the shoe is a recess and a boss or thimble long enough to reach nearly through the base of the calk, having a threaded hole extending through it and the shoe, in which the bolt or screw is fitted to hold the calk in place. The heel calks are similarly fitted in their recesses. The body of the shoe is made of wrought iron in any of the common forms designed to be fastened to the horse's foot, the calks being removable by loosening their screws. The advantage of this form of shoe is described as being that long, sharp calks can be easily put on for an icy time, and that short or smoother ones can be substituted for pavements or summer wear. The manufacturers claim that any one with an extra set of calks can sharpen his horse in about ten minutes.

Secretary Tracy has approved the plan of Engineer in Chief Melville for giving the five cadets to be appointed to the Engineer Corps this year a course of supplementary instruction before assigning them to active duty afloat. They will be taught practical engine and boiler building in the steam engineering shops in the yard, and will be afforded every facility for studying the machinery of all vessels fitting out and repairing at the yard.

Flexible Fixed Curve Rule.

Blake & Bradley, Swanton, Vt., are putting on the market a flexible fixed curve rule, as illustrated herewith. It consists of a straight flexible steel rule, Fig. 1, with

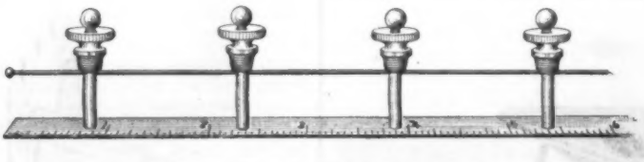


Fig. 1.—Flexible Fixed Curve Rule.

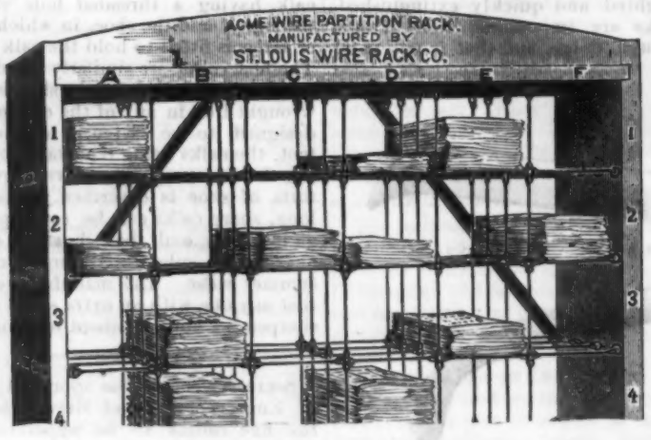
set-screw posts, through which a flexible steel rod runs. The rule is graduated both inside and outside, and can be set in any desired curve, even to form a complete circle. The rule is bent as desired, when the set screws are screwed down on to the rod, thus holding it in a fixed position, Fig. 2. It is designed for the use of

Fig. 2.—Flexible Rule Set on Curves.

draftsmen and architects in drawing, measuring and transferring regular or irregular curves; also in duplicating and measuring designs, or enlarging for working plans to a scale of inches. The rules are made in six sizes and lengths, and are put up one each in an ebonized case.

Acme Wire Partition Rack.

St. Louis Rack Company, St. Louis, Mo., are offering the trade a wire partition rack, as illustrated herewith. The sides,



Acme Wire Partition Rack, Upper Part.

top and bottom of this rack are made of 1-inch clear poplar 10 inches wide, stained cherry or walnut, handsomely varnished. The entire hight from the floor is 82 inches; width, 56 inches, with partitions 8 inches high by 9 inches wide, of which there are 54. The end of the wire shelving at the bottom and at one side is hooked into eye bolts, permitting them to be drawn taut or loosened for taking apart, the other end is hooked into screw eyes. A gas pipe brace is used in the fourth horizontal row of wires from the top. The braces at the back are of 1 x ¼ iron. It is knocked down and crated in a compact form for shipping, the weight of the package being 50 pounds. The points of excellence in the rack are referred to as cleanliness, lightness with strength, durability, appearance and cheapness. It is recommended for publishers, advertisers, advertising and subscription agents, railroad, real estate, insurance and business offices generally. A patent is pending on this rack.

Norwich Fruit Knife.

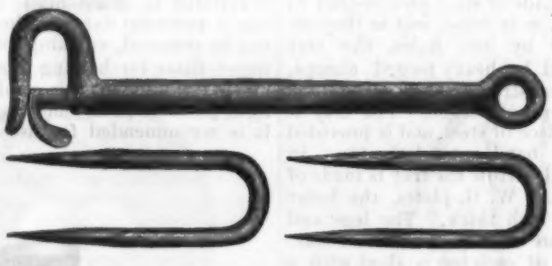
The Wm. Rogers Mfg. Company, Hartford, Conn., are introducing a novelty in

Norwich Fruit Knife.

the way of a fruit knife, as illustrated herewith. It will be seen that the blade has a saw edge, with which, we are advised, fruit can be cut with ease. The knife measures 6½ inches over all, and is made in plain, satin, arabesque and old silver finish. They are put up one or six in a neat satin-lined box. The peculiarity of the blade, together with its perfect adaptation to the use for which it is intended, recommends it to the trade.

Covert's Safety Gate Hook.

Covert Mfg. Company, West Troy, N. Y., are introducing a gate hook, as shown in the accompanying illustration. The manufacturers claim that it cannot become loosened or unhooked through accident and that its self-locking bolt prevents its being unhooked from the opposite side through any crack or narrow opening. It can be readily attached to a gate or door in any desired position. The hooks are made in two sizes, 4 and 6 inches in length, and are finished in XC plate.



Covert's Safety Gate Hook.

No. 4 Eclipse Lawn Sprinkler.

The accompanying illustration represents the No. 4 Eclipse Lawn Sprinkler, now being manufactured by John C. Kupferle, Second and Mound streets, St. Louis, Mo. It is made same as the No. 1, which met with gratifying sales, the new feature being the bottom runners, which, it is claimed, are of great convenience wherever a sprinkler is used on large gardens or lawns. It overcomes the necessity of turning off and on water, as it can easily be drawn in any direction by pulling cord, which can be attached to same. The top swivel and arms are made entirely of brass. Stand pipe is ¾ inch, painted red. The bottom plate, which is attached to the runners, is iron, painted green and bronzed. The runners are cast iron and japanned, making a durable and handsome sprinkler. It is referred to as throwing water from 30 to 60 feet; can be regulated to revolve very rapidly or slow, as desired.

No. 4 Eclipse Lawn Sprinkler.

A bridge to span the St. Lawrence River, from Levis to Quebec, is proposed by the Boston and Maine Railroad. Probable cost, $4,000,000.

The Spartan Combined Carriage Jack and Wrench.

Patent Development Company, 35 Warren street, New York, are introducing a combined jack and wrench, as illustrated in Fig. 1. It consists of a device about 14 inches long, made of solid steel. By

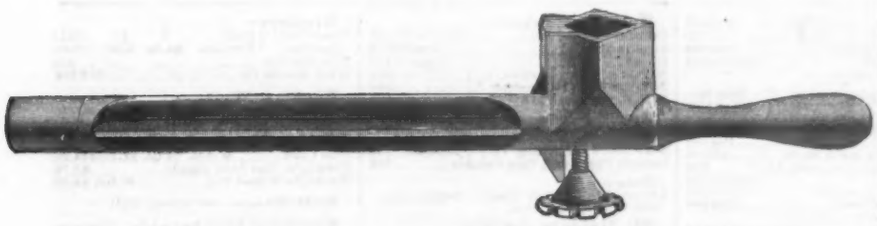


Fig. 1.—The Spartan Combined Carriage Jack and Wrench.

slipping the wrench on to the nut and screwing down the beveled thumb screw, the lever firmly holds the nut in the wrench The opposite end of the wrench is hollow, and threaded with both right and left hand threads. The nut is unscrewed with the wrench, when the hollow end is screwed on to the thread of the

Fig. 2.—Showing the Application of the Jack and Wrench.

axle, which results in a 7½ inch extension of the axle. Lifting the jack by the handle the wheel can be raised ½ inch from the ground and moved out on the extension, then lowered to the ground, leaving the wheel seat of the axle entirely exposed for cleaning and greasing, as shown in Fig. 2. The wheel and nut can then be replaced without soiling the hands or getting the nut begrimed with dirt and sand. It is claimed that by this plan the use of a cumbersome lever jack is done away with, and that it also permits of greasing a carriage on the road in case of a heated axle box. These jacks are finished in either nickel or japan, and each packed in a wooden box with a paint tube 1 x 4 inches filled with Dixon's graphite grease. They are made for ¾, ⅞, 1⅛, 1 and 1¼ inch axles.

Devore's Stove-Pipe Damper.

L. M. Devore, Freeport, Ill., is introducing a damper, as illustrated in Fig. 1. The damper spindle is so constructed that with it a suitable hole for its insertion in the pipe can be formed without the use of a tool. The spindle handle is made of wood, designed to be non-heating and always cool. The wire friction spring is made 1½ inches long, to insure elasticity and

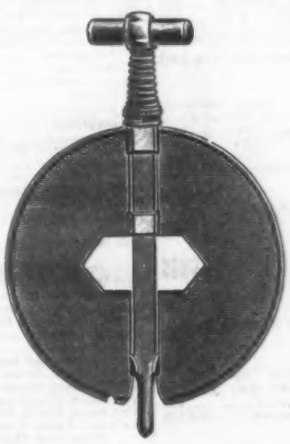


Fig. 1.—Devore's Stove-Pipe Damper.

durability. The spindle is attached to the damper plate, Fig. 2, by passing it through the open arches, and passing it inwardly

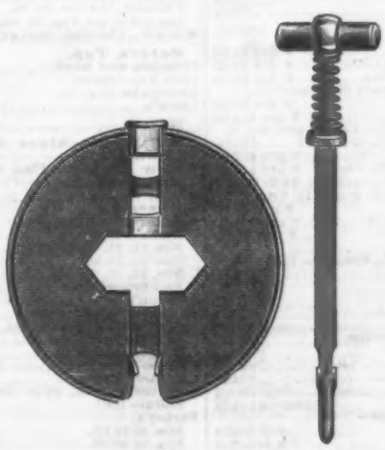


Fig. 2.—Devore's Damper in Detail.

until the recessed portion of the spindle passes between the open lugs on the blade.

An important invention has been under practical test for some time past on the electric cars at Atlantic City, N. J. It is made under one of the patents of the Universal Electric Railway Construction Company of Philadelphia, composed of the following officers: President, A. O. Dayton, superintendent of W. J. Division of Pennsylvania Railroad; vice-president and general manager, Edward Eldred; second vice-president, Samuel Anderson, an official of Pennsylvania Railroad; secretary and treasurer, Walter C. McCurdy. Their office is Room 47, Bullitt Building, Philadelphia. The claim for their mechanical regulating clutch for electrical cars is that there is a large saving of electrical energy, and as it does not require such a strong current to start the car the armatures last much longer.

The German newspapers contain long accounts of a very ugly scandal, in which one of the largest steel works, the Bochumer Verein, is involved. The charge is that for many years the officers have knowingly allowed inspectors' stamps to be forged, and have caused the passing of rejected railroad material. Baare, the general manager, denies the charge vehemently.

An electrical engineering exhibition is to be held at Taunton, England, during the months of August, September and October. The exhibition will comprise 16 departments, such as heating, lighting, motors, welding and brazing, &c., and promises to be a notable affair in electrical circles.

CONTENTS.

	PAGE.
Connecticut Manufactures	1
The Morgan-Ellis Wire-Drawing Machine. Illustrated	1
The Springfield Iron Company	2
Variations of the Open-Hearth Steel Process	4
The New Westinghouse Compound Engine Governor. Illustrated	6
Car Demurrage in the Valleys	6
Steel Structural Work in Chicago	8
The Perry Steam-Engine Indicator. Illus.	9
The Pollock Bosh Plate. Illustrated	10
Our San Francisco Letter	10
Machine Belting. Illustrated	12
Clay-Grinding Machine. Illustrated	13
The Week	13
Editorials:	
A Dull Period Well Ended	15
Fuel Gas as a By-Product	15
Compound Locomotives of Different Types	15
The Conference of October	16
Manufacturing in the World's Fair	16
Correspondence	17
The Amalgamated in the East	18
Obituary	18
The New Eureka Furnace	18
Treasury Decisions	19
The Stetson Failure	19
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous	20-21
Personal	21
National Tube Works	21
The Hackney Power Hammer	22
Trade Report: Philadelphia, Cincinnati, Cleveland, Detroit, St. Louis, Pittsburgh, Chicago, Coal Market, Financial, New York, Metal Market, New York Metal Exchange, British Iron and Metal Markets, Louisville	22-27
Hardware: Condition of Trade, Notes on Prices, Warranting Cutlery, Retail Hardware and Stove Dealers' Association, It Is Reported—, American Hardware in Great Britain, The Geo. Worthington Company, —Portraits, Trade Items, Price-Lists, Circulars, &c., Exports, Paints and Colors	28-34
The McNeil Rolling Mill Barrow, Illus.	35
The Royal Saw Set. Illustrated	35
The New Reliable Plumbers' and Tinners' Furnace. Illustrated	35
The Kinne Wagon Jack. Illustrated	35
Flexible Fixed Curve Rule. Illustrated	36
Acme Wire Partition Rack. Illustrated	36
Norwich Fruit Knife. Illustrated	36
Covert's Safety Gate Hook. Illustrated	36
No. 4 Eclipse Lawn Sprinkler. Illustrated	36
The Spartan Combined Carriage Jack and Wrench. Illustrated	37
Devore's Stove-Pipe Damper. Illustrated	37
Current Hardware Prices	38-43
Current Metal Prices	44

CURRENT HARDWARE PRICES.

JULY 1, 1891.

Notes.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓%
Excelsior.....₩ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20&20&10%

Ammunition.—

Caps, Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
A. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 57¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—
Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting.....15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
G. I. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—
First quality 4, 8, 10 and 12 gauge.....25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.....65&2%

Shells Loaded—
Standard List, July 19, 1890..40&10&10%

Wads—Price per M.

U.M.C.&W. R. A.—B. E., 11 up... 68¢
U.M.C.&W. R. A.—B. E., 9&10... 82¢
U.M.C.&W. R. A.—R. E., 8..... 90¢
U.M.C.& W.R. A.—B. E., 7.....$1.10
U.M.C.&W. R. A.—P. E., 11 up... 1.15
U.M.C.&W. R. A.—P. E., 9&10.. 1.50
U.M.C.&W. R. A.—P. E., 8..... 1.70
U.M.C.&W.R. A.—P. E., 7..... 1.80
Dis.30&2%

Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20..... 2.80

Anvils.—

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....11@11½¢
Armitage's Mouse Hole.....10½@11½¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company
} 70&10@70 &10&5%

Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....50%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 33⅓ quarters, No. 5, $5; No. 30, $3.50.20%
Lowis' Patent Single Twist.....45&5%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L. Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—
Clarks' small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.10.....25&10%
Joe.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives
French, Swift & Co.
Douglass'
} 33⅓ @ 33⅓&10%

Bonney's Adjustable, ₩ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₩ gr $1.70, 45%
Awls, Should. Peg, ₩ gr $2.45, 50@50&10%
Awls, Pat. Peg...₩ gr 63¢ ... 50@50&10%
Awls, Shouldered Brad..2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50.35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—

No. 1, 4½@5¢, No. 2 5½@6½¢
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 3% cash

Concord Axles, loose collar.....5½@6¢
Concord Axles, solid collar.....6½@7¢
National Tubular Self-Oiling.....33⅓&10&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

No.	2000	20	20
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—
Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $3; 12-inch, $3.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@50&10&5%

Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—
Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)...₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $13.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.)...₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50

Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky, Durham.....70&10
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Miscellaneous—
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barber's.....50&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Electric.
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—
Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Bellows—

Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@70&10&5%
Standard.....70@70&5%
Extra.....60@60&10%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889...70@70&5%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Stove.

Wood Lined "Crystal".....50%
"Embossed".....50%
"Oxidized".....45%
Paper Lined Zinc.....55%
"Crystal".....55%
"Embossed".....55%
"Oxidized".....45%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....75&10&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890.....75&10@75&10&5%

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's ..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush. Com'n " ....55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Blind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....3½¢

Braces.

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.35

Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $3.10 ;10 in.....$2.25
Buffalo Ball.....$1.10@$1.15

Barber's.
Nos. 10 to 16.....50%
Nos. 30 to 32.....50%
Nos. 40 to 63.....50&10%

Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15

Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf plain, Sargent list, 55&10@55&10&10%
Shelf, fancy, Sargent's list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting, Inch..... 9 10 9x11
Per doz ..$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%

Buckets, Well.

Galvanized—
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz. 14 qt, $4.25@$4.50
Heiwig's Flat Iron Band.....$3.75
Heiwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned..
Loose Pin, Acorns, Japanned, Plated Tips.
} 70&10 @ 75%

Wrought Steel—
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c ....
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
} 70&10 @75%

Bronzed Wrought Butts.....40%

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See Openers, Can.

Cards—List January 28, 1891.

Watson's Cotton, Wool, Horse and File.....25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—See Ammunition.

Casters—

Bed.....
Plate.....
Shallow Socket.....
} Brass...55@55&10% Others...60@60&10%

Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phoenix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....60&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Cement.

Vietor Elastic.....5 ℔ pails ₩ ℔ 5½¢

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....60@60&25

American Coil, in cask lots.

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1½¢ ℔.
German Coil, list Oct. 6, 1890...60@60&5%
German Halter Chain, list Oct 6, 1890 60@60&5%
Covert Halter.....60&2%
Covert Traces.....35&2%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&2%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White, case lots, ₩ gr 50¢; small lots 55@56¢
Red, case lots ..₩ gr 67¢; small lots 77@78¢
Blue, case lots..₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W.
New Haven.
Witherby.
Mix.
Ohio Tool Co.
} ..75 @ 75&10%

Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₩ ℔.....15@18¢

Chucks—

Beach Pat.....each, $8.00.....30%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tilton Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each, 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal. $3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Parallel, C. H. Besly & Co.....25%
Warner's.....40@10@40@10&5%
Saw Clamps, see Vises. Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....60&10@50&10&10%
Rubber, per dos $10.00.....20%
Perfect.....50%
Kellogg's.....50&10
Sweet & Clark's.....50&10

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers.....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....35%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ lb 10@11¢
Patent, good quality.....₩ lb 11@12¢
White Cotton Braided, fair.₩ lb 24½@25¢
Common Russia Sash.....₩ lb 12½@13¢
Patent " " .....₩ lb 14¢
Cable Laid Italian Sash.....₩ lb 21@22¢
India Cable Laid " .....₩ lb 12¢
Silver Lake—
A Quality, White, 50¢.....25%
A Quality, Drab, 55¢.....25%
B Quality, White, 30¢.....10%
B Quality, Drab, 35¢.....10%
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..32¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Massachusetts, White.....28¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cot'n Braided, White,.....₩ lb 27¢

Wire Picture.

Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....35%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain

Cutters—

Meat.

Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$ 0.00

Woodruff's ₩ doz.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$90	$225

.....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@5.25
Ali Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's, ₩ dos Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $13.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18@$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....60&10&5%
Graham's Pat. Groove Shank 50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....30@30&10%
Disston's.....60%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....60%&10&10%
P. S. & W.....70%
Knapp & Cowles:
No. 1.....60&10@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50@5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....35&10%
Buck Bros.' Screw-Driver Bits ....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery. — No. 4 to No. 54 to Flour, CF 46 gr. 150 gr. F. FF.

Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4¾¢	5¼¢	2¾¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6¼¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Penn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key..50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond)..60&10@60&10&5%
Eagle.....60&10&5@60&10@10%
Other makers, best brands60&10@60@20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 35%&10%
Warner's Screen Corner Irons..35%@ 35%&10%
Stearns' Frames and Corners..25&5&10%
Cortland.....40@40&5%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....55@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....6&10&10&10%
Keystone, P. D. & Co., each, $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro.....30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz.....35%

Furnaces, Soldering.

Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. 3 Gem, copper reservoir, 8.50

Fuse— ₩ 1000 ft.

Common Hemp Fuse, for dry ground.$2.70
Common Cotton Fuse, for dry ground 3.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.80
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.14.00

Gates, Molasses—

Stebbin's Pattern.....75&10&5@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....30&10%
Boss, ₩ dos:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch.....25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ dos 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00
Family, Cleveland Stone Co.....20%

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.

Hafts. Awl.

Sewing, Brass Fer.₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ dos.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top.₩ gr $10.00....45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.

Covert's, Rope, Jute.....6 & 10&10&2%
Covert's, Rope, 7-16-in., Jute, ...70&2%
Covert's, Rope, ½-in. Hemp .....60&2%
Covert's Adj. Rope Halters .....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters.....35&5&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
C. Hammond & Son.
Vorree.
} 50@50&10%
Fayette R. Plumb.
"Artisans' Choice," A. E. Nail.40&12½%
Regular "Y. & P.," A. E. Nail.....30%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&2%
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.20, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@22
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 lb and under.....₩ lb 40¢
3 to 5 lb.....₩ lb 36¢ } 70@70&10%
Over 5 lb.....₩ lb 30¢
Wilkinson's Smiths.....10½@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods,

Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 12¢; No. 6, 16¢; No. 2 and No. Reversible, 18¢.

Cross-Cut Saw Handles—

Boynton's Loop Saw Handles, 50¢....60%
Champion.....15%

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	2	3
Per dos.	$0.90	1.00	1.25	1.35	1.80

60&10&10

Boggin's Latches.....₩ doz 30¢@35¢
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.69; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₩ doz $1.40..... 10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd...₩ gr 3.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
J. S. Smith & Co.'s Pat File.....50
File, assorted.....₩ gr 7 75
Auger, assorted.....₩ gr 5.00 } 50%
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Seed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft. 10¢.....50 &15@60%
Garrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....40%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's..... } 40 & 10 @
Buffalo Hammer Co..... } 50&5 %
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Morsse Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible.....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $0.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.40, 60%
N. E.....₩ doz $7.00, 55%
N. E. Reversible.....₩ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ doz $5.00, 55&10%
Automatic.....₩ doz $12.50, 50%
Common Sense.....₩ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Seed's Latch and Hinges. ₩ doz $12.00, 50%

Spring Hinges—

Union Spring and Blank Butts.....40%
Sear's Spring Hinge Co.'s list, March 1886.....30%

Acme.....30%
J. S.....35&10%
Emptre and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....30%
Oxford.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Suckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Niagara, Holdback pattern, per gross.....$14.00

Wrought Iron Hinges
List February 14, 1891.

Strap and T.....50&10%
Corrugated Strap and T.....50 & 10 %
Screw Hook and Strap. { 6 to 12 in., ₩ ℔. 4¢ / 14 to 20 in., ₩ ℔.3½¢ / 22 to 36 in., ₩ ℔. 3¢
Screw Hook and Eye.... { ⅜ in., ₩ ℔ 7¾¢ / ½ in., ₩ ℔ 5½¢ / ⅝ in., ₩ ℔ 4¾¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₩ ℔.....5¢ / over 12 in., ₩ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....30%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern..30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5
Am. Axe and Tool Co., S. & O. Pat. } @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....65&5@65&10%
Planter's, Cotton &c.....65&5@65&10%
Warren Hoe.....60%
Magic .....₩ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ doz $18.....60%

Bit.

Extension,
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list..
Clothes Line, Reading list.
60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list.
55&10@60&10&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....80@80&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whittemore—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....40&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@2.40
Self-Heating.....₩ doz $9.00 net
Self-Heating, Tailors'....₩ doz $18.00 net
Mrs. Pott's Irons.....60&5%
Enterprise Star Irons.....60&5%
XX Cold Handle Sad Iron .....60&5%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ ℔.....3 @3½¢
Combined Fluter and Sad Iron, ₩ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₩ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....8¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91..... .....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₩ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....33⅓&5
Victor.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....20%

Drawing—

Witherby..... } ..75@75&10%
P. S. & W..... }
Mix .....
New Haven.....
Merrill .....60&10@60&10&5%
Douglas .....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25&25&5%

Hay and Straw—

Lightning. Mfrs'. price ₩ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ doz $11.00@$11.50
Heath's.....₩ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ doz.$7.00 @ $8.00

Mincing.

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ doz $3.00 ,25%
Buffalo Double Adj'table.₩ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture. Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....35&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular.

Plain with Guards, ₩ doz.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards..... ....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular..... ₩ doz $3.60
3-inch Bull's-eye Police regular ..... ₩ doz $3.90
2¾-inch Bull's-eye Police flash light.... ₩ doz $4.00
3-inch Bull's eye Police flash light..... ₩ doz $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Woollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....35%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....50%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25&5%
Cotton Chalk.....50%
Samson Cotton, No. 4, $3; No. 4½, $3.50; 10%
Silver Lake, Braided, No. 84 ft., No. 1, $6.50; No. 2, $7.00; No. 3, ...50 ₩ gro.....35%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes... Nos. 18 19 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85...33⅓&2%
Deits, Nos. 36 to 39.....40%
Deits, Nos. 51 to 63.....40&10%
Deits, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net price
Romer's.....35%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889..... } 65&10@70% Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88.....
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&35%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net price
Deits Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Sheparson or U. S.....35%
Seed's N. Y. Hasp Lock.....35%

Padlocks—

List June 10, 1891 .....50&2%
Norwich Lock Mfg. Co., old list...70&2%
Yale Lock Mfg. Co.'s.....net price.
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 500..15%
A. E. Deits.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ doz. $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fralm's Keystone Scandavian. Nos. 119, 120, 130 and 140.....90&10% Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 1010 line.....85&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr.. .33⅓%
Ferguson's.....25%
Morris and Triumph, list Aug. 16, 1886. 60@2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&25%
Reading.....60%&10@60%&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886...70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....35&5&2%
Hugunin's New Sash Locks.....35&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, No. 100, ₩ gr $8; 105, $10...8%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75	.....	50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%	
Jennings	5.50	6.75	45&45&10%	
Other Machines...	2.35	2.75	.....	
Phillips' Patent with Augers	7.00	7.50	.....	25%
Miller's Falls.....	7.50	.....	.....	25%

Pluting.

Knox, 4½-inch Rolls .....$2.25 each } 30%
Knox, 6-inch Rolls.....$3.00 each }
Eagle, 3½-inch Roll. $2.15..... 35%
Eagle, 5½-inch Roll, $2.85..... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel 6 in .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... 35%
Domestic Fluter .....each, $1.50
Geneva Hand Fluter, White Metal ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00..... 30%
Shepard Hand Fluter, No. 85 ₩ doz 15 50..... .... 40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 96 ₱ doz $8.00.....40%
Clark's Hand Fluter, ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo ₱ doz $10.00.....10%

Hoisting—
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block.....40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—
Anthony Wayne, ₱ doz No. 1, $51; No. 2, $45; No. 3, $42
Western Star, ₱ doz No. 2, $45; No. 3, $48.

Mallets.
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Pennsylvania. New Model, Excelsior, Continental, &c.....60@60&5%
Philadelphia.....60@10&10%
Perfection.....60&10&10%
Easy.....60&10@60&10&5%
Other Machines.....60&10&5@70%

Muzzles—
Safety.....₱ doz, $3.00, 25%

Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89.....75&10%
Tack Mfrs.' list.....70%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$2.30 @ $2.35

Horse—

	Nos. 6	7	8	9	10
Ausable.....	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%

Clinton, Fin..	19¢	17¢	16¢	15¢	14¢..... 30%
Essex.....	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%

Lyra.....	19¢	17¢	16¢	15¢	14¢..... 30%
Snowden	19¢	17¢	16¢	15¢	14¢..... 30%
Putnam.....	.28¢	21¢	20¢	19¢	18¢.

1000 ₱ in year 15%

Vulcan.....	.28¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n	.25¢	23¢	22¢	21¢	20¢.

25@25&5%

Globe.....	.23¢	21¢	20¢	19¢	18¢.

20&5&5%

Boston.....	.23¢	21¢	20¢	19¢	18¢.

20&5&5%

A. C.....	.25¢	23¢	22¢	21¢	21¢.

25&10@33⅓&5%

C. B.-K.....	.25¢	23¢	22¢	21¢	21¢.

25&10@33⅓&5%

Maud S.....	.25¢	23¢	22¢	21¢	21¢.

40&10%

Champlain..	.23¢	20¢	25¢	24¢	23¢.

25&10&10%

Saranac.....	.23¢	21¢	20¢	19¢	18¢..30&10%
Champion...	.25¢	23¢	22¢	21¢	20¢.

10&10&10%

Capewell....	.23¢	20¢	5¢	24¢	23¢.

35&5@35&10%

Star.....	.23¢	21¢	20¢	19¢	18¢.

10&10@10&12½%

Anchor.....	.23¢	21¢	20¢	19¢	18¢.....35%
Western....	.23¢	21¢	20¢	19¢	18¢..40&10%

Empire Bronzed.....14 ₱ ₱.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed.....	5.40¢	6.00¢ off list.
Cold Punched.....	5.00¢	5.10¢ off list.

In packages of 100 ₱, add 1-10¢ ₱ ₱, net; in packages less than 100 ₱, add ½¢ ₱ ₱, net.

Oakum—
Best or Government.....₱ ₱ 7@7½¢
U. S. Navy.....₱ ₱ 6¢@6½¢
Navy.....₱ ₱ 5½¢@6¢

Oilers
Zinc and Tin.....65&10@70%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....50%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....50%
Broughton's Brass.....50%
Gem P. D. & Co.....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.
Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00.
Star.....₱ doz $2.75
Sprague, No. 1, $3.00; 2, $2.25; 3, $2.50; 10&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50.....40%
World's Best, ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.50.....45%
Champion ₱ doz $2.00.....50%

Packing, Steam—
Rubber—
Standard.....60&5@65%
Extra.....60@50&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ₱ 80¢....25@25&5%

Miscellaneous—
American Packing.....10¢@11¢ ₱ ₱
Russia Packing.....14¢ ₱ ₱
Italian Packing.....13¢@14¢ ₱ ₱
Cotton Packing.....15¢@17¢ ₱ ₱
Jute.....7¢@8¢ ₱ ₱

Padlocks—See Locks.

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ ds.		3.00	3.25	3.75
Helwig's.		2.50	2.75	3.00
Sidney Shepard & Co.		2.25	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt.....₱ doz $5.40
Wire, Stable and Milk, 14 qt..₱ doz $7.80
Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt.	6.50	7.50

Pans.
Dripping.
Small sizes.....₱ ₱ 6¼¢
Large sizes.....₱ ₱ 5½¢
Silver & Co. (Covered).....40%
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60&10%
Dust—
Steel Edge, No. 1.....₱ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Champion.....₱ doz 7.25
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eureka, 1886.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gem.....₱ doz 5.25
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State..₱ doz 27.00 @ 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turntable.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
72.....₱ doz 4.25
76.....₱ doz 5.75
78.....₱ doz. 6.50
Potato—
White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60@10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W Co.... 50&10@50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.

1¼ and under, Plain	55%
1¼ and under, Galvanized	45%
1¼ and over, Plain	65%
1¼ and over, Galvanized	52½%

Boiler Tubes.

Sizes up to 2¾ in. inclusive	55%
Sizes 3 to 6 in. inclusive	65%
Sizes 7 in. and up	55%
Casing	55%

Planes and Plane Irons—
Wood Planes—
Molding.....35&2%
Bench, First Quality.....50&2%
Bench, Second Quality.....55&2%
Bailey's (Stanley R. & L. Co.)..40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.)..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.)..... 20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Merrion Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes.....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting..20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....30&10@30&10&10%
Standard Tool Co.....50@50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to 2
Buck Bros.....30%
Auburn "Thistle."
Ohio.
Sandusky } 35&2%
S. & I. J. White.....25%

Plates.
Felloe.....₱ ₱ 6¢@6½¢

Pliers and Nippers—
Button's Patent.....50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz.....20&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00..30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List.....70&10@70&10&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₱ doz $4; 8-Ring $2

Pokes, Animal—
Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror.....₱ pro $6.00, —%
Lustro.....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ₱ 8¢
Boynton's Noon Day, ₱ gro.....13.00
Parlor Pride Stove Enamel..₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-₱ cans, ₱ ₱ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ₱ cans.....12½¢
Black Jack Water Paste, 5 and 10 ₱ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gross, $7.20
Crown Paste, in 5 and 10 ₱ pails ₱ ₱ 12¢
Black Flag.....₱ gross, $7.20
Black Flag, 5 and 10 ₱ pails,...₱ ₱, 12¢
Black Flag, liquid, in bottles, ₱ gro..$8.00

Poppers, Corn—
Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....30&10@30%
Henis.....₱ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₱ doz $13.00, 33⅓%
Curtiss Hammer.....₱ doz $9.00
Giant, No. 1.....₱ doz. $15.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz. $9.00, 25%
Eclipse.....₱ doz, $18.00, 30%

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....60&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "F" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00.....40%

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $3.50@3.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check..40%
Solid Tinners', P. S. & W. Co., ₱ doz $1.44, 55%
Tinners' Hollow Punches P. S. & W. Co. 20&2%
Rice Hand punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ₱ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Fainted, ₱ foot 4¢, 40%
Barn Door. Light. In. ½ ¾ ⅞
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.25..net

Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot.....4½¢
Moore's Wrought Iron.....25%

Rakes—
Cast Steel, Association goods...66⅔&10%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&15%
Canton Lawn Rake.....$9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....20%
Wostenholme and Butcher, $10.00 to £. 10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₱ doz $15.00

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers.....₱ doz $1.25
Hill's Old Style Ringers.....₱ doz $1.12½
Hill's Tongs.....₱ doz $3.00
Hill's Rings.....₱ doz bxs $1.00
Perfect Rings.....₱ doz bxs $1.50
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.00
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers.....₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.15@1.25
Electric Hog Rings....₱ doz boxes $1.50
Electric Hog Ringers.....₱ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....50@60&10%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....25&2%
Stair, Black Walnut.....₱ doz 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%

Rope.
Manila...¼ in. and larger.....₱ ₱ 10½¢
Manila.....⅝ in. ₱ ₱ 10½¢
Manila.....¼ and 5-16 in. ₱ ₱ 11½¢
Manila Tarred Rope.....₱ ₱ 9½¢
Manila, Hay Rope.....₱ ₱ 10½¢
Sisal.....½ inch and larger ₱ ₱ 7½¢
Sisal.....⅜ in. ₱ ₱ 7½¢
Sisal.....¼ and 5-16 in. ₱ ₱ 8½¢
Sisal, Hay Rope.....₱ ₱ 7½¢
Sisal, Tarred Rope.....₱ ₱ 6½¢
Sisal, Medium Lathe Yarn.....₱ ₱ 6¢
New Zealand...½ in. and larger ₱ ₱ 7¢
New Zealand.....⅜ inch, ₱ ₱ 7½¢
New Zealand, ¼ and 5-16 inch, ₱ ₱ 8¢
New Zealand, Hay Rope.....₱ ₱ 7¢
New Zealand, Tarred Rope.....₱ ₱ 6½¢
Note.—Manufacturers' prices on above ½¢ ₱ ₱ less, f. o. b. factory.
Cotton Rope.....₱ ₱ 13½@16¢
Jute Rope.....₱ ₱ 6½@6¾¢
Wire—
List May 1, 1886.
Iron.....82½&2½%
Iron, Galvanized.....40&2½%
Cast Steel.....40&2½%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular.....45%
Disston's Cross Cuts.....45%
Disston's Hand.....20%
Woodrough & McParlin.
Hand, Panel and Rip.....25%
Narrow Champion Cross Cuts with Handles, ₱ foot.....20¢
Champion Thin Back Cross Cuts, ₱ foot.....23¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....31¢
One Man Champion Cross Cuts, ₱ foot.....40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30%
Narrow Champion Cross Cuts with Handles, ₱ foot.....20¢
Champion Thin Back Cross Cuts, ₱ foot.....22¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....31¢
One Man Champion Cross Cuts, ₱ ft. 40¢

Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 32¢
Atkins' Champion and Electric Tooth X Cuts ₱ foot 30¢
Atkins' Hollow Back X Cuts ₱ foot 20¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 45%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%
C. E. Jennings & Co., Hand, Panel and Rip 25%

Hack Saws—

Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161 ₱ doz $6.75@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Richie Bros.' Platform 40%

Scale Beams—See Beams, Scale.

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₱ doz $4.00. 10%
Box, 2 Handle ₱ doz $6.00. 10%
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ₱ doz $3.50 net
Ship, R. I. Tool Co. 10¢

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₱ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75@75&10%
Bed 25&5%
Hand Rail, Sargent's 60%&10%
Hand Rail, H. & F. Mfg. Co 70&10&25%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list 50@50&5%
Jack Screws, P. S. & W. 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

Cork—

Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Gowe Bros & Hulbert 35%

Machine—

Flat Head, Iron 55%
Round Head, Iron 50%

Wood—

List January 1, 1891.
Flat Head Iron 72½% } Extra 10 & 5% on ten gross.
Round Head Iron 67½%
Flat Head Brass 72½%
Round Head Brass 65 %
Flat Head Bronze 72½%
Round Head Bronze 65 %
Rovers' Drive Screws 33⅓%

Scroll Saws—See Saws, Scroll.

Scythes.

Grain 40&5@40&10%
Grass 40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. 20@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18 25%
Henry's Combination Haft ₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50. 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

Nail—

Square ₱ gr., $4 00@$4.25
Round ₱ gr. $3.25
Buck Bros 27½%
Cannon's Diamond Point ₱ gr., $12, 20%

Rivet,

Regular list 50&10%

Saw—

Stillman's Genuine ₱ doz $5.00@7.75, 40&5%
Stillman's Imita ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's. No. 0, $3 00; No. 1, $15, 15@20% cash 20&10@20&10&10

Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $18.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25¢
Leopold 40&10&50%
Atkin's Lever ₱ doz No. 1, $6.00
Atkin's Criterion ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₱ doz $15. 50%
Crescent ₱ doz $1.00

Sharpeners, Knife.

Parkins.
Applewood Handles ₱ doz $6.00, 40%
Rosewood or Cocobolo ₱ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%
Goodell's, ₱ doz $9.00 25%

Shears—

American (Cast) Iron 75&10@75&10&5%
Barnard's Lamp Trimmers ₱ doz $3.75
Tinners' 20&2½
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
Cast Steel Trimmers; First quality 30@30&10%
Second quality 30&10@30&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list 60%
Galvanic, 3½ to 9 in, ₱ doz, $1.00 ₱ inch

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $9.75@4.00
Henry's Pruning Shears, ₱ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888 50&10@60&5%
R. & E., list Dec. 15, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 15, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E. list Dec. 15, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

Ship Tools—

L. & I. J. White 30&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix and Bryden's Boss, at factory 44.00
Bryden's Frog Pressure, at factory $5.00

Mule—

Add $1 ₱ keg to above prices.

Ox, Wrought—

Ton lots ₱ ₱ 9¢
1000 ₱ lots ₱ ₱ 9½¢
Less ₱ lots ₱ ₱ 10¢

Shot—

	Ton lots	Small lots
Drop, up to 0B, 25-₱ bag	$1 37	$1.42
Drop, 0 to 3B, 5-₱ bag	.35	.36
Drop, BB and larger, 25-₱ bag	1.62	1.67
Drop, BB and larger 5-₱ bag	.40	.41
Buck and Chilled, 25-₱ bag	1.62	1.67
Buck and Chilled, 5-₱ bag	.40	.51
Dust Shot, 25-₱ bag	2.00	2.05
Dust Shot, 5-₱ bag	.45	.46

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 2½@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
H. M. Myers Co. 30 %
Payne Pettebone & Son 25%&25%
Remington's (Lowman's Pat.) 20@50&10%
Rowland's, Black Iron 50&10%
Rowland's Steel 50&5@50&10%

Shovels and Tongs—

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves—

Mann's Tin Rim 50&25%
Buffalo Metallic, S. & A. Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters ₱ doz $2.00; ₱ gr $21.00
Electric ₱ gr $21.00
A. & W. Sifters ₱ doz 2.00
Hunter's ₱ doz $2.00
Smith's Adjustable Sifters ₱ doz 2.00

Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz.	80¢	$1.00
Mesh 20, Nested, ₱ doz.	95¢	1.10
Mesh 24, Nested, ₱ doz.	$1.15	1.25

Skeins, Thimble—

Western list 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case 50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&10&5&2%
Covert, New R. E. 60&10&5&2%
Covered Spring 60&10&10%

Snaths, Scythe.

List 60@..%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp, Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp, Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers 40&15%
C. Rogers & Bros. 40&15%
Rogers & Bro. 40&15%
Reed & Barton 40@40&5%
Wm. Rogers Mfg. Co. 40, 15&5%
Simpson, Hall, Miller & Co. 40, 15&5%
Holmes & Edwards Silver Co. 40, 15&5%
L. Boardman & Son 50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50&5%
No. 49 Nickel Silver 50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal 50, 10&5%
18% Rogers' German Silver 60&5%
22% Rogers' Nickel Silver 50&5%
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60@60&5%
Boardman's Weed Silver 50&10&5%
Boardman's Britannia Spoons, case lots 60&5% cash

Springs—

Door.—

Torrey's Rod, regular size ₱ doz $1.30
Gray's, ₱ gr., $20.00 20%
Bee Rod ₱ gr., $20.00 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.20 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's No. 1, ₱ doz, $18.00; No. 2, $15.00 50%
Rubber, colored, ₱ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 35@30@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Bait Scroll 60&10&10%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron } .80&10@80&10&10%
Nickel-Plated }
Try Square and T Bevels 60&10@60&10&10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's ₱ doz $2.00
Blair's "Climax" ₱ doz $1.25

Lemon—

Porcelain Lined, No. 1 ₱ doz $6.00, 25&30%
Wood, No. 2 ₱ doz $5.00, 35%
Wood, Common ₱ doz $1.70@1.75
Dunlap's Improved ₱ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz. 25&10%
Jennings' Star ₱ doz $2.50
The Boss ₱ doz $2.50
Dean's. No. 1, ₱ doz $6.50; 2, $3.25; 3, $1.90; Queen, $2.50
Little Giant 60@50&5%
King 40&5%
Hotchkiss Straight Flash ₱ doz $12.00
Silver & Co., Glass ₱ gro. $9.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger ₱ ₱ 7@7½¢
Barbed, ¼ in. ₱ ₱ 8@8½¢

Fence Staples, Galvanized. } Same price as B'rb Wire. See Trd. Rep.
Fence Staples, Plain. }

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods 40&10@50%
Butterfield's Goods 40&10@50%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 35%&25@40%
Reversible Ratchet 30 %
Gardner 35%

Stops, Bench.

Morrill's ₱ doz $9, 50%
Hotchkiss's ₱ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ₱ doz $3 10%
Cincinnati 25&10%

Stone—

Hindostan No. 1, 8¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ₱ ₱ 3½¢
Washita Stone, Extra ₱ ₱ 20@21¢
Washita Stone, No. 1 ₱ ₱ 15@16¢
Washita Stone, No. 2 ₱ ₱ 11@12¢
Washita Slips, No. 1, Extra ₱ ₱ 37@40¢
Washita Slips, No. 1 ₱ ₱ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ₱ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ₱ $1.85
Turkey Oil Stone, 4 to 8 in ₱ ₱ 40¢
Turkey Slips ₱ ₱ $1.00@1.50
Lake Superior, Chase ₱ ₱ 18¢
Lake Superior Slips, Chase ₱ ₱ 20¢
Seneca Stone, Red Paper Brand ₱ ₱ 18@20¢
Seneca Stone, High Rounds ₱ ₱ 20@22¢
Seneca Stone, Small Whets ₱ gro $14.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ₱ doz $2.22
Cast Iron, Steel Points ₱ doz 80¢
Socket ₱ doz $1.75
Bullard's 25@25&10%

Strops, Razor—

Genuine Emerson 60@60&5%
Imitation " ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ₱ doz $2.00
Lamont Combination ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ₱ doz, No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@20%
Silver's 40&10%

Sweepers, Carpet.

Bissell No. 5 ₱ doz $17.00
Bissell No. 7 New Drop Pan. ₱ doz $19.00
Bissell, Grand ₱ doz $36.00
Grand Rapids ₱ doz $36.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ₱ doz $15.00
Jewel ₱ doz $17.00
Improved Parlor Queen, Nickeled ₱ doz $27.00
Japanned ₱ doz $24.00
Excelsior ₱ doz $22.00
Garland ₱ doz $18.00
Parlor Queen ₱ doz $24.00
Housewife's Delight ₱ doz $15.00
Queen ₱ doz $16.00
Queen, with band ₱ doz $18.00
King ₱ doz $20.00
Weed, Improved ₱ doz $18.00
Hub ₱ doz $16.00
Cog-Wheel ₱ doz $16.00
Easy ₱ doz $22.00
Monarch ₱ doz $22.00
Goshen ₱ doz $21.00
Ladies' Friend ₱ doz $15.00
Advance ₱ doz $18.00
Supreme ₱ doz $22.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard Weights.

Carpet Tacks—

American Iron, Blued 80%
Am. Iron, Tin'd or Cop'd 80&10%
Steel, Plain or Bright 75&10%
Steel, Tinned or Coppered 80%
Swedes Iron, Blued 75&10%
Swedes Iron, Tinned or Cop'd. 80%
American Iron Cut Tacks 80%
Swedes Ir. Uphol'rs' Tks, Blu. 75&10%
Swedes Iron Upholsterers' Tacks, Tinned 80%
Gimp and Lace Tacks, Blued 75&10%
Gimp and Lace Tacks, Tin'd. 75&10%
Swedes Iron Basket or Trimmers' Tacks 75&10%
Miners' Tacks 80%
Bill-Posters' or RR. Tacks 75&10%
Bill-Posters' or Railroad Tacks, Tinned 80%
Copper Tacks 40%
Copper Finish. & Trunk Nails 40%
Cigar Box Nails 60%
Zinc Glaziers' Points 40%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 55%
Tin-Capped Trunk Nails 55%
Finishing Nails 70&10%
Trunk and Clout Nails, Black and Tinned 75%
Common and Patent Brads 75%
Hungarian Nails 75%
Basket and Chair Nails 70&10%
Leathered Carpet Tacks 55%

Extra 5 @ 10%

Miscellaneous—

Double-Pointed, 120 count 35&10%
Wire Carpet Nails 50&10%
Plymouth Rock Steel Carpet Tacks 25%

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, B. & E. Mfg. Co.'s list.....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—See Benders and Upsetters, Tire.

Tools.

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Thaves, Cincinnati Tool Co.....20%

Lumber.

Sing Peavies, "Blue Line"...₱ doz $20.00
Sing Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies.....₱ doz $19.00
Cant Hooks, "Blue Line"..₱ doz $16.00
Cant Hooks, Common Finish..₱doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ dos $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes.....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft. $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00

Saw.

Atkins' Perfection.....₱ doz $12.60
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 11@13¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive.....₱ dz $2.50 15%
Mouse, Bonanza.....₱doz 80 90@$1.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 90¢; in full cases, ₱ doz .75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer.....₱ gro $15.00

Triers—

Butter and cheese.....35%

Trimmers, Spoke.

Bonney's.....₱ dos $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ dos. 55&10%
Douglas'.....₱ dos $9.00, 20%
Cincinnati.....35%

Trowels—

Lothrop's Brick and Plastering.....20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....35%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ₱ Balls	26¢	34¢
No. 12, ¼ and ⅛ ₱ Balls	25¢	33¢
No. 18, ¼ and ⅛ ₱ Balls	23¢	32¢
No. 24, ¼ and ⅛ ₱ Balls	22¢	32¢
No. 36, ¼ and ⅛ ₱ Balls	20¢	31¢

No. 264, Mattress, ¼ and ⅛ ₱ Balls.53@54¢
Chalk Line, Cotton, ¼ ₱ Balls.....25¢
Mason Line, Linen, ¼ ₱ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ₱ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ₱ Balls.....16@16½¢
3-Ply Hemp, 1¼ ₱ Balls.....15@15½¢
Cotton Wrapping, 5 Balls to ₱ ..15@16¢
2, 3, 4 and 5-Ply Jute, ¼ ₱ Balls.....10¢
Wool.....6½@6¾¢
Paper.....13@14¢
Cotton Mops, 6, 9, 12 and 15 ₱ to dos..18¢

Vises—

Solid Box.....50&10@50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....30@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....
Massey Quick Action.....20 @ 25 %

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60%&10%
Hopkins'.....₱ dos $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%

Miscellaneous.

Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40 %

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70%
Boilers and Saucepans.....40&10@50&5%
Tinned Boilers and S'pans.40&10@50&5%
Rustless Hollow-Ware.....60@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch.... 6	7	8	9
Each....55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11½ in.		4.00
Cuspidors		3.00
Spittoons, "Daisy," 3 in.	4.00	4.50
Peck Measure	4.00	
Half-peck Measure	2.50	

See also Pails.

Indurated Fiber—25%

Spittoons, No. 2, ₱ dos.....$0.00
Basins, Ringed, ₱ dos., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$5.00
See also *Pails.*

Silver Plated, Hollow—

4 mo. or 5 % cash in 30 days.

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
} 40&5%

Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5&5%

Washers—

Size hole	5-16	⅜	½	⅝ to 1¾
Washers	6	5	3.50¢	3

In lots less than 200 ₱, ₱ ₱, add ¼¢, 5-₱ boxes 1¢ to list.

Wedges—

Iron.....₱ ₱ 2½¢
Steel.....₱ ₱ 3½¢

Weights, Sash—

Solid Eyes.....₱ ton $18@$19

Well Buckets, Galvanized See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.38

Wire and Wire Goods—

Iron—

Market.
Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 0 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone.
Br. and Ann'd, Nos. 16 to 18.....77½%
Bright and Ann'd, Nos. 19 to 26.....80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₱ ₱..... 5¢
Galvanized Fence, Nos. 8 and 9.....70%
Annealed Fence, Nos. 8 and 9.....80%
Annealed Grape, Nos 10 to 14.....80%
Brass, list Jan. 18, 1884.....35%
Copper, list Jan. 18, 1884.....35%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....65%
Malin's Steel and Tin'd on Spools.....55%
Malin's Brass and Cop. on Spools.....45%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 30%
Steel Music Wire, 13 to 30...60@70¢ ₱ ₱
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.

Bright Wire Goods—

Standard list.....80&10%

Wire Cloth and Netting.

Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'.60&10%
Lamson & Sessions' Standard.70&10%
P. S. & W. Agricultural.....60&10%
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75& 5 @ 7½ &1

Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....55%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....35%
Boardman's.....40&10%
Always Ready.....35&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Hercules.....70%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List September 20, 1890, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886. 85@85&10

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	47 @	..
Linseed, City, boiled.....	50 @	..
Linseed, Western, raw.....	45 @	..
Lard, City, Extra Winter..	54 @	55
Lard, City, Prime.....	51 @	52
Lard, City, Extra No. 1....	42½@	45
Lard, City, No. 1.....	37½@	40
Lard, Western, prime.....	51 @	..
Cotton-seed, Crude, prime.	31 @	32
Cotton-seed, Crude, off grades.....	25 @	30
Cotton-seed, Summer Yellow, prime.....	37 @	38
Cottonseed, Summer Yellow, off grades.....	32 @	36
Sperm, Crude.....	72 @	73
Sperm, Natural Spring.....	.. @	..
Sperm, Bleached Spring....	.. @	..
Sperm, Natural Winter....	73 @	75
Sperm, Bleached Winter...	78 @	80
Whale, Crude.....	.. @	..
Whale, Natural Winter.....	54 @	56
Whale, Bleached Winter....	56 @	58
Whale, Extra Bleached.....	58 @	60
Sea Elephant, Bleached Winter.....	63 @	64
Menhaden, Crude, Sound...	25 @	..
Menhaden, Crude, Southern	.. @	..
Menhaden, Light Pressed..	27 @	..
Menhaden, Bleached W'ter.	29 @	..
Menhaden, Extra Bleached	31 @	33
Fallow, City, prime.....	42 @	..
Tallow, Western, prime....	.. @	..
Cocoanut, Ceylon.....	6¾@	7¼
Cocoanut, Cochin.....	8¾@	9
Cod, Domestic.....	40 @	43
Cod, Foreign.....	.. @	..
Red Elaine.....	36 @	38
Red Saponified.....₱ ₱	4½@	5
Bank.....per gal	27 @	..
Straits.....	28 @	..
Olive, Italian, bbls.....	68 @	70
Neatsfoot, prime.....	55 @	65
Palm, prime, Lagos....₱ ₱	6 @	6¼

Mineral Oils.

Black, 20 gravity, 25 @ 30 cold test.....per gal	7½@	8
Black, 29 gravity, 15 cold test.....	8½@	9
Black, 29 gravity, summer.	6½@	7
Cylinder light, filtered.....	15 @	20
Cylinder, dark, filtered	12 @	15
Cylinder, dard, st'm refined	10 @	15
Paraffine, 23½ @ 24 gravity.	13½@	14
Paraffine, 25 gravity.....	12½@	13
Paraffine, 28 gravity.....	9½@	10
Paraffine, red, 21 @ 22 gr'ty	.. @	..
Paraffine, red, 23½@23 gr'ty	13 @	14

Paints and Colors.

Barytes, Foreign, ₱ ton.	$22.00	@24.00
Barytes, Amer. floated...	30.00	@32.00
Barytes, Amer. No. 1....	19.00	@20.00
Barytes, Amer. No. 2....	13.00	@16.00
Barytes, Amer., No. 3....	11.00	@12.00
Blue, Celestial.....₱ ₱	6 @	8
Blue, Chinese.....	50 @	55
Blue Prussian.....	35 @	40
Blue, Ultramarine.....	8 @	25
Brown, Spanish.....	½@	1
Brown, Vandyke, Amer..	3 @	3½
Brown, Vandyke, English	6 @	8
Carmine, No. 40, in bulk.	3.10 @	..
Carmine, No. 40, in boxes or barrels.....	3.20 @	..
Carmine, No. 40, in ounce bottles.....	4.20 @	..
Chalk, in bulk.....₱ ton.	2.75 @	3.00
Chalk, in bbls..₱ 100 ₱.	35 @	40
China Clay, English....	₱ ton. 13.00	@ 18.00
Cobalt Oxide, prep'd....	2.90 @	....
Cobalt Oxide, black.....	1 @	1¼
Cobalt, Oxide, black.....	lots 100₱ 3.00	@ ....
	less 100₱ 2.65	@ ....
Green, Paris, in bulk....	14 @	15¼
Green Paris, 170 @ 175 ₱ kegs.....	14½@	15¼
Green, Paris, small pack.	16 @	21¾
Green, Chrome, ordinary	8 @	11
Green, Chrome, pure...	22 @	25
Lead, Eng., B.B. white....	8½@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 ₱..		@ 7¼
Kegs, lots 1000 ₱ to 5 tons.		@ 6¾
Kegs, lots 5 tons to 12 tons..		@ 6¾
Kegs, lots 12 tons and over..		@ 6½
Lead White in oil 25 ₱ tin pails add to keg price.		@ ⅛
Lead, White, in oil, 12½ ₱ tin pails, add to keg price.....		@ 1
Lead, White, in oil, 1 to 5 ₱ assorted tins, add to keg price.		@ 2½
Lead, Red, bbls. and ½ bbls....	6¼ @	7
Lead, Red, kegs.....	6¼ @	7¼
Litharge, kegs.....	6¼ @	7¼
Litharge, bbls. and ½ bbls....	6¼ @	7

TERMS, &c.—Lead and Litharge.—On lots of 1000 ₱ or over, 60 days' time or 2¼ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35 @	1¼
Ocher, French Washed.....	1½@	2¼
Ocher, German Washed...	1½@	3
Ocher, American.....	½@	1½
Orange Mineral, English...	9 @	9½
Orange Mineral, French....	10 @	10½
Orange Mineral, German ..	9½@	10
Orange Mineral, American.	8 @	8½
Paris White, English Cliff-stone.....	1.00 @	1.15
Paris White, American.....	70 @	75
Red, Indian, English.....	5½@	7
Red, Indian, American....	2 @	6½
Red, Turkey.....	9 @	14
Red, Tuscan.....	9 @	11
Red, Venetian, American..	₱ 100 ₱. 1.00	@1.25
Red, Venetian, English....	1.00	@1.50
Sienna, Italian, Burnt and Powd.₱ ₱	5 @	6½
Sienna, Ital., Burnt Lumps	1½@	2½
Sienna, Ital., Raw, Powd..	5 @	6½
Sienna, Ital., Raw Lumps..	2 @	2½
Sienna, American, Raw....	1½@	1½
Sienna, American, Burnt and Powdered.....	1½@	1¾
Talc, French.....	1½@	1¾
Talc, American.....	1 @	1¼
Terra Alba, Fr'ch, ₱ 100 ₱	90 @	1.00
Terra Alba, English.....	50 @	60
Terra Alba, American No. 1	70 @	75
Terra Alba, American No. 2	40 @	50
Umber, Turkey, Bnt. and Powd., ... ₱ ₱	3½@	4
Umber, Turkey Bnt. Ln	2½@	3
Umber, Turkey, Raw and Powdered.....	3½@	
Umber Turkey, R'w Lmps	2½@	2¾
Umber, Turkey, Bnt. Amer.	1½@	1¾
Umber, Turkey, R'w Amer.	1½@	1¾
Yellow, Chrome.....	10 @	25
Vermilion Americ. Lead..	11½@	17
Vermilion, Quicks'er, bulk.	64 @	66
Vermilion, Quicks'er, bags.	65 @	67
Vermilion, Quicksilver, smaller pkgs.....	69 @	71
Vermilion English Import	80 @	85
Vermilion, Imitation, Eng.	8 @	25
Vermilion, Trieste.....	87½@	90
Vermilion, Chinese.....	90 @	95
Whiting, Common. ₱ 100 ₱	40 @	45
Whiting, Gilders'.....	50 @	55
Zinc, American, dry....₱ ₱	4½@	5
Zinc, French, Red Seal.....	.. @	8½
Zinc, French, Green Seal..	.. @	8½
Zinc, French, V. M. X.....	.. @	7
Zinc, Antwerp, Red Seal....	.. @	7½
Zinc, Antwerp, Green Seal	.. @	8½
Zinc, German, L. Z. O....	.. @	6½
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½@	11¼
lots less than 1 ton	11 @	11¾
Zinc, V. M. in Poppy Oil, Red Seal, ...	.. @	..
lots of 1 ton and over....	10 @	10¼
Lots of less than 1 ton....	10½@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₱ ₱	35 @	40
Blue, Prussian.....	20 @	45
Blue, Ultramarine.....	12 @	18
Brown, Vandyke.....	7 @	8
Green, Chrome.....	8 @	13
Green, Paris.....	18 @	18½
Sienna, Raw.....	7 @	14
Sienna, Burnt.....	7 @	14
Umber, Raw.....	7 @	10
Umber, Burnt.....	7 @	10

Putty.

In wooden pails.....	@	.01¼
In tin cans.....	.02 @	.02½
In bladders.....	.02 @	.02¾

Spirits Turpentine.

In regular bbls.....	39½@	..
In machine bbls.....	39½@	..

Glue.

Low Grade.....₱ ₱	8 @	10
Cabinet.....	12 @	14
Medium White.....	13 @	15
Extra White.....	17 @	20
French.....	10 @	22
English.....	10 @	15
Irish.....	12 @	.

CURRENT METAL PRICES.

JULY 1, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅜ to 2 in. round and square.. / 1 to 6 in. x ⅜ to 1 in.....	₩ lb 2.00 @ 2.10¢
Refined Iron:	
⅜ to 2 in. round and square.. / 1 to 4 in. x ⅜ to 1½ in.....	₩ lb 2.10 @ 2.30¢
4½ to 6 in. x ⅜ to 1 in.....	
1 to 6 in. x ¼ and 5-16	₩ lb 2.30 @ 2.50¢
Rods—⅜ and 11-16 round and sq..	₩ lb 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12.....	₩ lb 2.40 @ 2.60¢
"Burden Best" Iron, base price..	₩ lb..... 3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ lb..... 2.80¢
"Ulster".....	₩ lb..... 3.00¢
Norway Bars	4.00¢
Norway Shapes.....	5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¼¢
Best Cast Steel, base price in small lots	5 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.		R. G.		Cleaned.	
16 to 16.....	₩ lb 3.00	@ 3.00¢	3.35	@	.....	¢
17 to 20.....	₩ lb 3.15	@ 3.25¢	3.35	@	3.75	¢
21 to 24.....	₩ lb 3.35	@ 3.35¢	3.60	@	.....	¢
25 and 26....	₩ lb 3.35	@	3.60	@	.....	¢
27.....	₩ lb 3.50	@ 3.62½¢	3.85	@	.....	¢
28.....	₩ lb 3.65	@	¢ 4.10	@	.....	¢
	B. B.				2d qual.	
Galv'd, 14 to 20,	₩ lb. 4.75	@ ...	4.60	@	.....	¢
Galv'd, 21 to 24,	₩ lb, 5.12	@ ...	5.00	@	.....	¢
Galv'd, 25 to 26,	₩ lb, 5.50	@ ...	5.35	@	.....	¢
Galv'd, 27.....	₩ lb, 5 90	@ ...	5.70	@	.....	¢
Galv'd, 28.....	₩ lb, 6.25	@ ..	6.10	@	...	¢
Patent Planished.....	₩ lb		A 10¢		B, 9¢	
Russia.....	₩ lb		10½¢ @ 11¢			
American Cold Rolled B. B.....	₩ lb		5¢ @ 7¢			
Craig Polished Sheet Steel.....	₩ lb,		8½¢			

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast.....	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic".....	₩ lb 80 ¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	23¢
Straits, Pigs.....	22¢
Straits in Bars	24¢

Tin Plates.

Charcoal Plates.—Bright.

			Per box.
Melyn Grade.....	IC, 10 x 14..	@	$6.50
" "	... .IC, 12 x 12..	@	6.75
" "	..... IC, 14 x 20..	@	6.50
" "	.....IC, 20 x 28..	@	13 20
" "	....IX, 10 x 14.. ...	@	8.00
" "	....IX, 12 x 12..	@	8.25
" "	....IX, 14 x 20..	@	8 00
" "	.....IX, 20 x 28..	@	16 00
" "	.....DC, 12½ x 17.. ...	@	6 00
" "	.....DX, 12½ x 17..	@	7.50
Calland Grade.....	IC, 10 x 14..	@	6.50
" "	.....IC, 12 x 12..	@	6 75
" "	.....IC, 14 x 20.. ...	@	6.40
" "	.....IX, 10 x 14..	@	7.65
" "	. .....IX, 12 x 12..	@	8.00
" "	.....IX 14 x 20.	@	7.65
Allaway Grade.....	IC, 10 x 14..	@	6.15
" "	.. ...IC, 12 x 12..	@	6.30
" "	.....IC, 14 x 20..	@	6.15
" "	.....IC, 20 x 28..	@	12.00
" "	.....IX. 10 x 14..	@	7.30
" "	. .....IX, 12 x 12..	@	7.60
	.....IX, 14 x 20.	@	7.30
"	.....IX, 20 x 28..	@	14.00
" "	...DC, 12½ x 17.. ...	@	5.80
" "	...DX, 12½ x 17.. 6.00	@	6.80

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20,.	@	$5.70
10 x 20..	@	7.85
20 x 28,.	@	11.20
IX, 10 x 14, 14 x 20..	@	6.60
BV Grade.—IC, 10 x 14, 14 x 20,.	@	5.70

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20..	@	$5.45
20 x 28..	@	10.60
IX, 14 x 20.....	@	6.20
20 x 28.....	@	12.35
Abecarne Grade.—IC, 14 x 20...	@	5.25
20 x 28....	@	10.60
IX, 14 x 20....	@	6.35
20 x 28.	@	12.35

Tin Boiler Plates.

IXX, 14 x 26.....112 sheets.....	@	$13.50
IXX, 14 x 28.....112 sheets....	@	13.75
IXX, 14 x 31 .. ....112 sheets	@	15.25

Copper.

DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem

Ingot.

Lake	@	15 ¢
Anson'a Grade Arizona	@	13½¢
Ansonia Grade Casting	@	12½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	33 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30	72		22	22	22	23	25	27	31	...
36	96		22	22	22	24	26	30	33	....
36	96		22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48	96		22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60	96		22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84	96		24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	...	....	....	....	....	....

All Bath Tub Sheets....	16 oz.	14 oz.	12 oz.	10 oz.	
Per pound.....	$0.27	0.29	0.31	0.35	
Bolt Copper, ⅝ inch diameter and over, per pound.....					22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot.....	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 18 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper.

14 x 48, 14 x 52, 14 x 56, 14 x 60 in.

14 and 16 oz. and heavier..33¢. By the case...32¢	₩ lb
12 oz. and lighter.....35¢. By the case...34¢	₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..36¢. 12 oz.....39¢	₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅝	½	⅝	¾	⅞	1	1¼
8-14	6-12	37	33	30	29	28	27	24
15	13	33	34	31	30	29	28	25
16	14	39	34	32	31	30	29	25
17	15	40	35	33	30	31	30	26
18	16	42	36	34	32	31	30	27
19	17	43	37	35	34	33	32	29
20	18-19	44	39	37	36	35	34	31
21	20	46	41	39	38	37	36	34
22	21	48	42	40	39	38	37	36
23	22	50	44	42	41	40	39	39
24	23	53	46	44	43	41	40	41
25	24	56	49	46	45	44	43	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive ....35¢	
Plain, above 3 inch.....45¢	
Plain, 5-16 inch.....45¢	
Plain, ¼ inch.....60¢	
Plain, 3-16 inch.....$1.00	
Plain, ⅛ inch..... 1.50	
Fancy Tubing, Brass, to No. 20, inclusive.....45¢	₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....25 @ ..5	

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive...	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28.....	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive...	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28..... ..	.39	.42	.45	.49	.53	.58	.65	.75

Brass and Copper Wire.

Old English guage standard.	Com. high brass. Per lb.	Low brass. Per lb.	Gildi'g br'ze & copper Per lb
All Nos. to No. 16, inclusive....	$0.22	$0 26	$0.30
No. 17 and No. 18.....	.23	.27	.31
No. 19 " " 20.....	.24	.28	.32
No. 21.....	.25	.29	.33
No. 22.....	.26	.30	.34
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.	52¢	No. 15.....	70¢
No 10.....	54¢		

Tobin Bronze—Rods.

¼ inch and larger..... ...18¢ ₩ lb, net

Tobin Bronze—Piston Rods.

1¼ inch and smaller..... 19¢ ₩ lb, net
Over 1¼ inch.....21¢ ₩ lb, net

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5½¢ @ 6 ¢
Bertha (pure)	8½¢ @ 9 ¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks.....	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American	4¾¢ @ 5¢
Bar..... 5	¢ @ 5¼¢
Pipe, subject to trade discount....	7¢
Tin-Lined Pipe, subject to trade discount....	15¢
Block Tin Pipes, subject to trade discount.....	37½¢
Sheet, subject to trade discount.....	7½¢

Solder.

½ @ ½ (Guaranteed)...	14¢
No. 1.....	12¢
Extra Wiping.....	11½¢ @ 15¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson..... . ... ₩ lb	.... @ 15 ¢
Hallett's.	" .... @ 13 ¢

ALUMINUM.

Prices in Ingots.

In lots of 2000 lb and over.....₩ lb $1.50

Old Metals.

(Prices Paid in New York.

Heavy Copper.....	₩ lb 13 ¢
Light Copper...	₩ lb 11 ¢
Heavy Brass.....	₩ lb 10 ¢
Light Brass.....	₩ lb 8 ¢
Lead.....	₩ lb 4 ¢
Tea Lead.....	₩ lb 3½¢
Zinc.....	₩ lb 3 ¢
No. 1 Pewter.....	₩ lb 16 ¢
No. 2 Pewter.....	₩ lb 3 ¢
Wrought Scrap Iron.....	₩ gross ton $19.00
Heavy Cast Scrap.....	₩ gross ton 12.00
Stove Plate Scrap.....	₩ gross ton 8.00
Burnt Iron.....	₩ gross ton 6.00